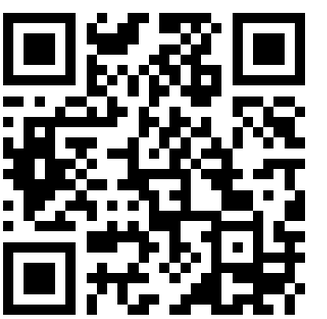
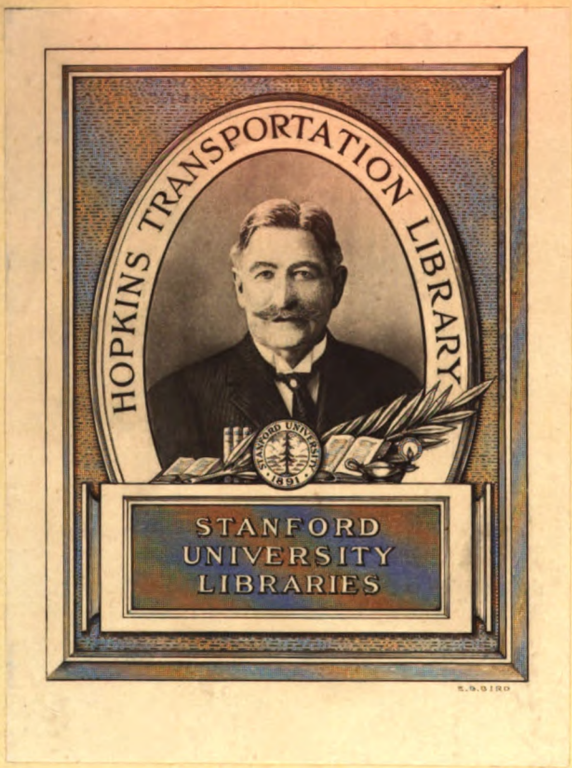
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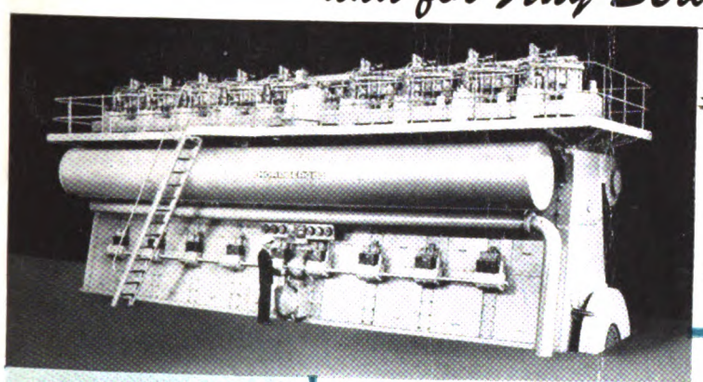
the LOG

Transportation

NORDBERG
DIESEL
POWER



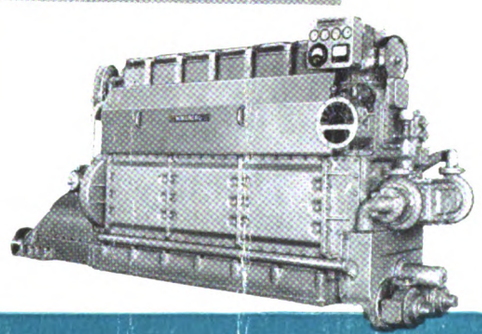
For Ships of Any Size
and for Any Service



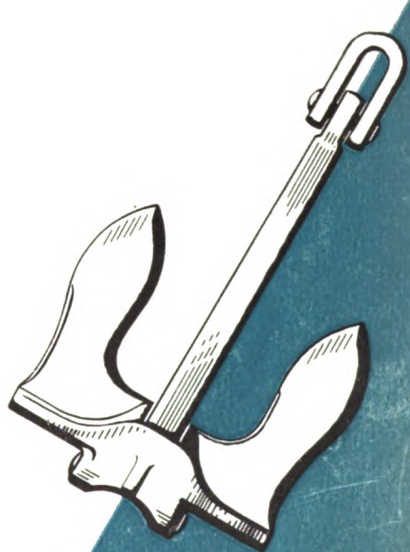
TWO-CYCLE

See Page 3

FOUR-CYCLE



NORDBERG
DIESEL ENGINES



JANUARY 1949
Volume 44 • Number 1

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EDITORIAL INDEX ON PAGE....21
ADVERTISERS' INDEX ON PAGE 60

1 Unified Service

In 358 World Ports

- Enter any principal world port. You'll find a Gargoyle Representative who knows your ship's current lubrication needs . . . who is equipped to render service that means quick turn-arounds, continuous top engine performance.
- Specify world-wide Gargoyle Marine Lubrication Service!

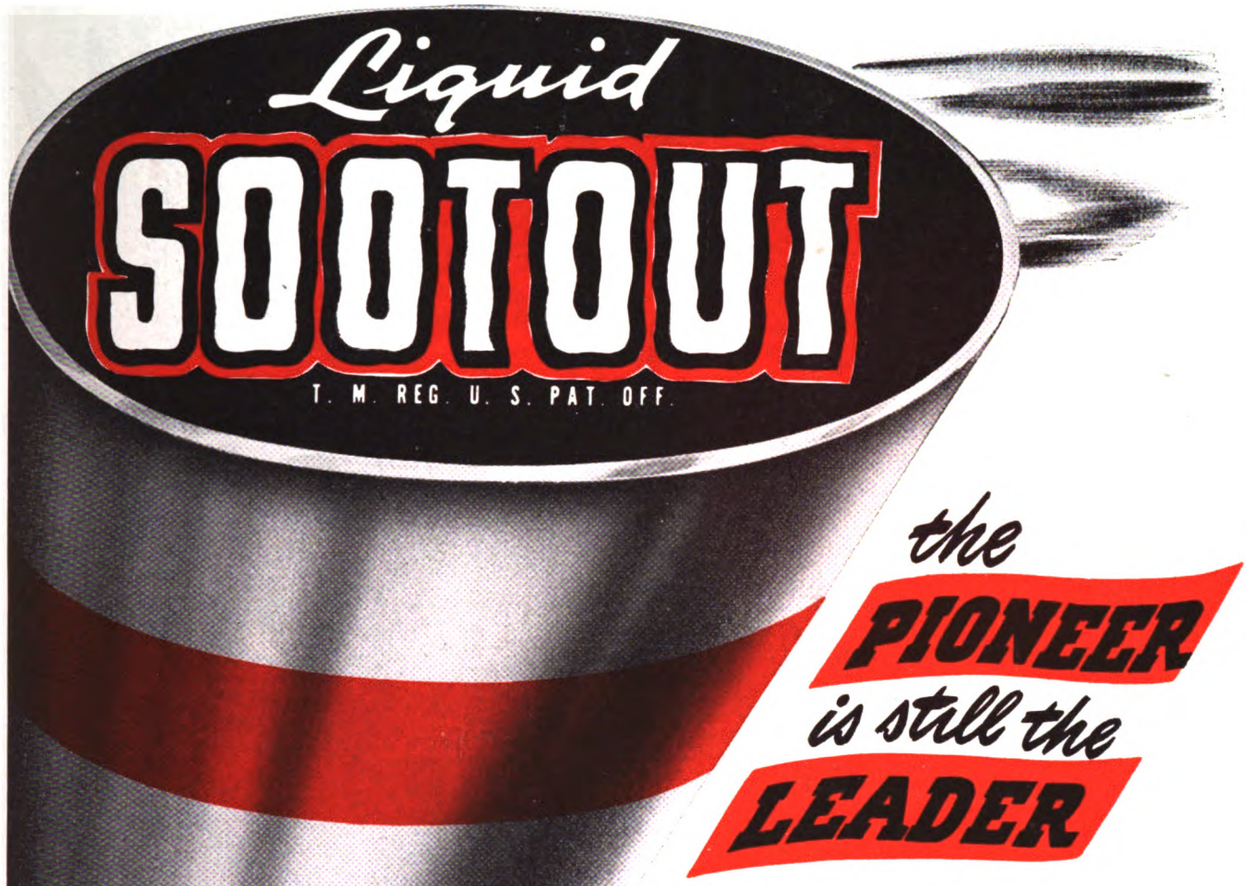


GARGOYLE

MARINE OILS AND ENGINEERING SERVICE

SOCONY-VACUUM OIL CO., INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

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the PIONEER is still the LEADER

The *Original* Dual Fuel Oil Treatment that gives *Constant Cleaning Action* from Tank to Stack . . .

Liquid SOOTOUT *leadership* has been steadily maintained by *outstandingly superior performance.* It is the modern successor to the old powder type fuel oil treatments and sludge solvents. Its superiority is recognized generally by marine men *who judge a product on the basis of actual performance.*

Liquid SOOTOUT was the *first* to pioneer in what has become a highly competitive field. *Today,* as in the past, it is providing double cleaning action from tank to stack with *less cost* and *less labor.* It is on this basis of *actual superior performance* that Liquid SOOTOUT has maintained its *leadership over all imitators.*

Double Cleaning Action

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid. When applied to fuel oil in proper proportion, Liquid SOOTOUT disperses condensation and sludge forming elements, and reduces strainer, preheater and nozzle maintenance.

FOR FIRESIDE — Liquid SOOTOUT removes carbon scale and slag in combustion areas. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.



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*Baltimore, Maryland, Phelps Packing & Rubber Co.
Baltimore, Maryland, The Terminal Warehouse Co.
*Boston, Massachusetts, Howard C. Burke, Inc.
Boston, Massachusetts, Wiggin Terminals, Inc.
Brooklyn, New York, Lehigh Warehouse Corp. of Brooklyn
*Brownsville, Texas, Coast Iron & Machine Works
*Corpus Christi, Texas, Coast Iron & Machine Works
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Norfolk, Virginia, Southgate Storage Co.
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ALCOA STEAMSHIP COMPANY, INC.

OFFICES IN: CHICAGO, MOBILE, MONTREAL, NEW ORLEANS, NEW YORK, NORFOLK, ST. LOUIS, TORONTO

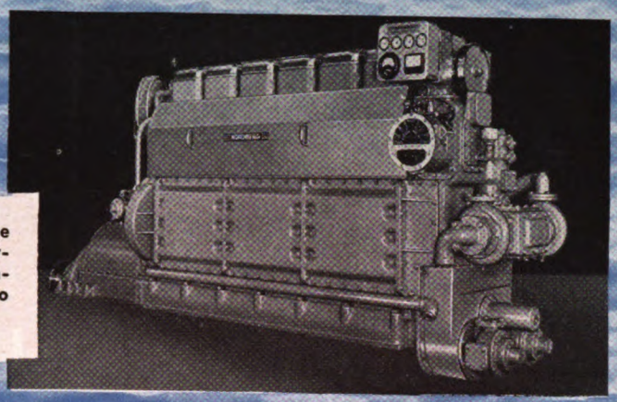
This advertisement in leading magazines is helping to acquaint the public with the excellent freight and travel facilities now offered by ships of the American Merchant Marine.

The LOG, published monthly, semi-monthly in July, by MILLER FREEMAN PUBLICATIONS OF CALIFORNIA, 124 West Fourth Street, Los Angeles 13, California, on the 25th of each preceding month. Executive, Advertising and Editorial Offices, 121 Second Street, San Francisco 5, California. Subscription (including Yearbook Number) in United States, $2.00 per year or $5.00 for three years; Foreign $4.00 per year. 25c per copy. Yearbook, $1.00 single copy. Entered as second-class matter February 5, 1916 at the post office Los Angeles, California, under act of March 3, 1879. Postmaster: Please send Notice 3578 to The LOG, 121 Second Street, San Francisco 5.

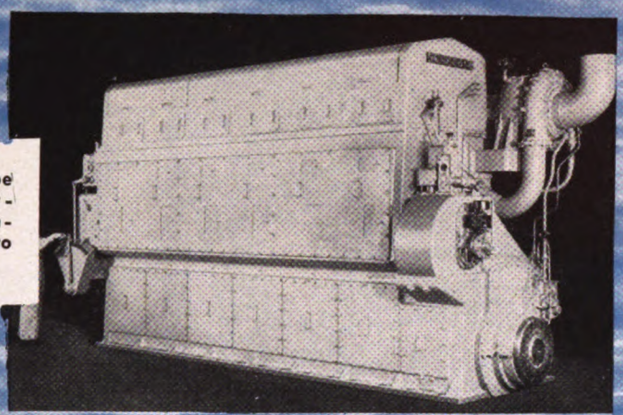
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There is a NORDBERG DIESEL

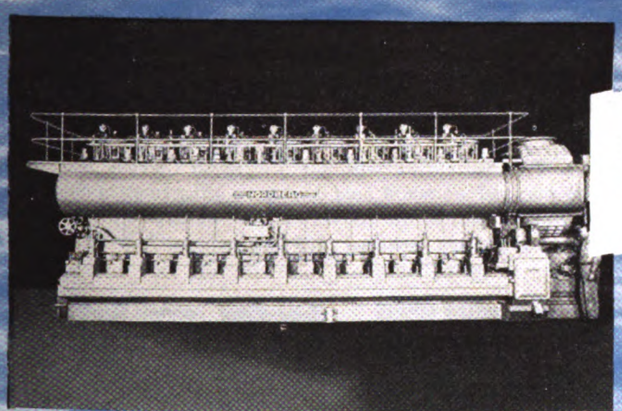
for powering your vessel



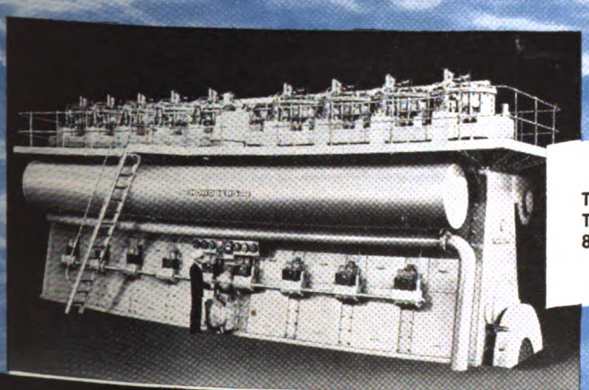
Four-cycle — Type FSM-9 and 13 Supercharged and Non-Supercharged 220 to 1370 horsepower.



Four-cycle — Type FSM-16 Supercharged and Non-Supercharged 750 to 1750 horsepower.



Two-cycle — Type TSM-17 and 21 1250 to 4000 horsepower.



Two-cycle — Type TSM-29 3570 to 8500 horsepower.

• Where the propelling machinery is within the range of 220 to 8500 horsepower, this extensive line of Nordberg Diesels permits the selection of a Nordberg engine for all types of marine service. When considering marine power, investigate the merits of Nordberg Diesel power.

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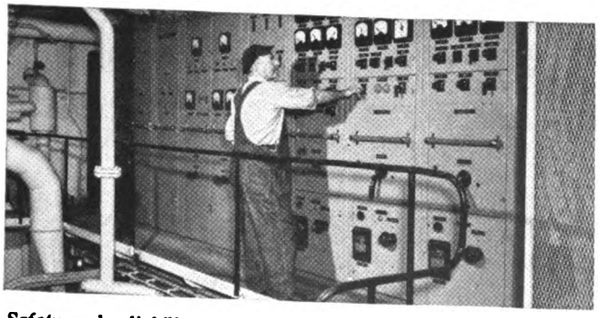
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SELF-UNLOADER DISCHARGES 2200

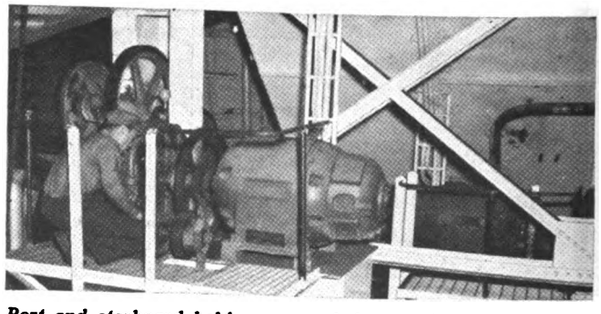
SS Crispin Oglebay's new, all-electric conveyor system—powered by G-E turbines, motors and control—permits this vessel to put in at more ports, make quicker turn-arounds.



The 240-foot boom conveyor on the Columbia Transportation Company's SS Crispin Oglebay, longest ever used on a self-unloader, is almost half the ship's length. In unloading, port and starboard hold conveyors bring cargo of limestone or coal to a forward elevator conveyor, which takes it up to a hopper at the pivot end of the boom conveyor. Conveyors are driven by four G-E induction motors totalling 750 hp. They help increase unloading speed from a normal 1800 long tons per hour—for ships of this type—to 2200.



Safety and reliability mark the G-E conveyor control. Because of the type of cargo handled, all control stations are totally enclosed and dust-proof. This is the 900-kw main switchboard for the ship's turbine-generators.



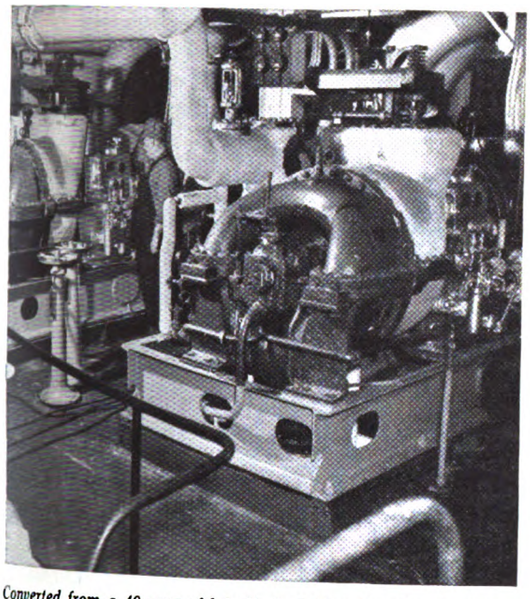
Port and starboard hold conveyor belts are driven at 325 feet per minute by these two G-E 100-hp motors. For oiling and maintenance, auxiliary slow-motion drive is provided, with the hold and elevator belts each operated by a G-E 1-hp motor.

—GENERAL ELECTRIC—

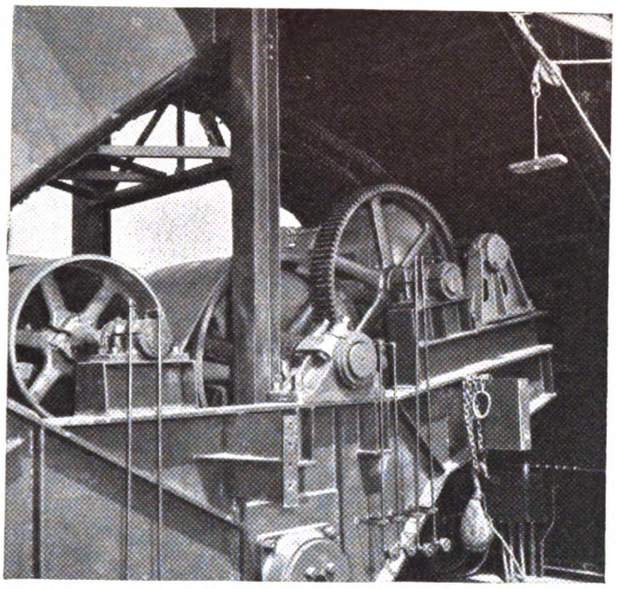
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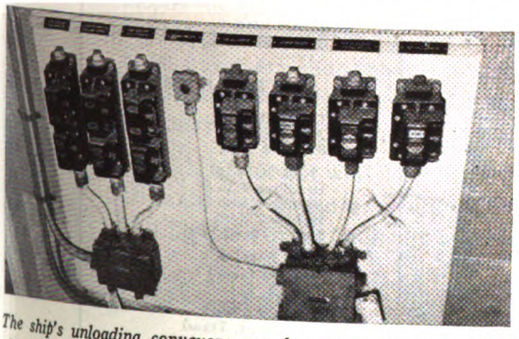
SETS FAST PACE, TONS PER HOUR !



Converted from a 40-year-old bulk freighter by the American Shipbuilding Company, the self-unloader can now put into ports that have inadequate unloading facilities. Power for all the unloading equipment is supplied by two G-E turbine-generators.



When the huge boom is swung out, it can discharge cargo up to 230 feet away. This G-E 300-hp motor, by means of the large gears shown, drives the boom conveyor at a speed of 425 feet per minute.

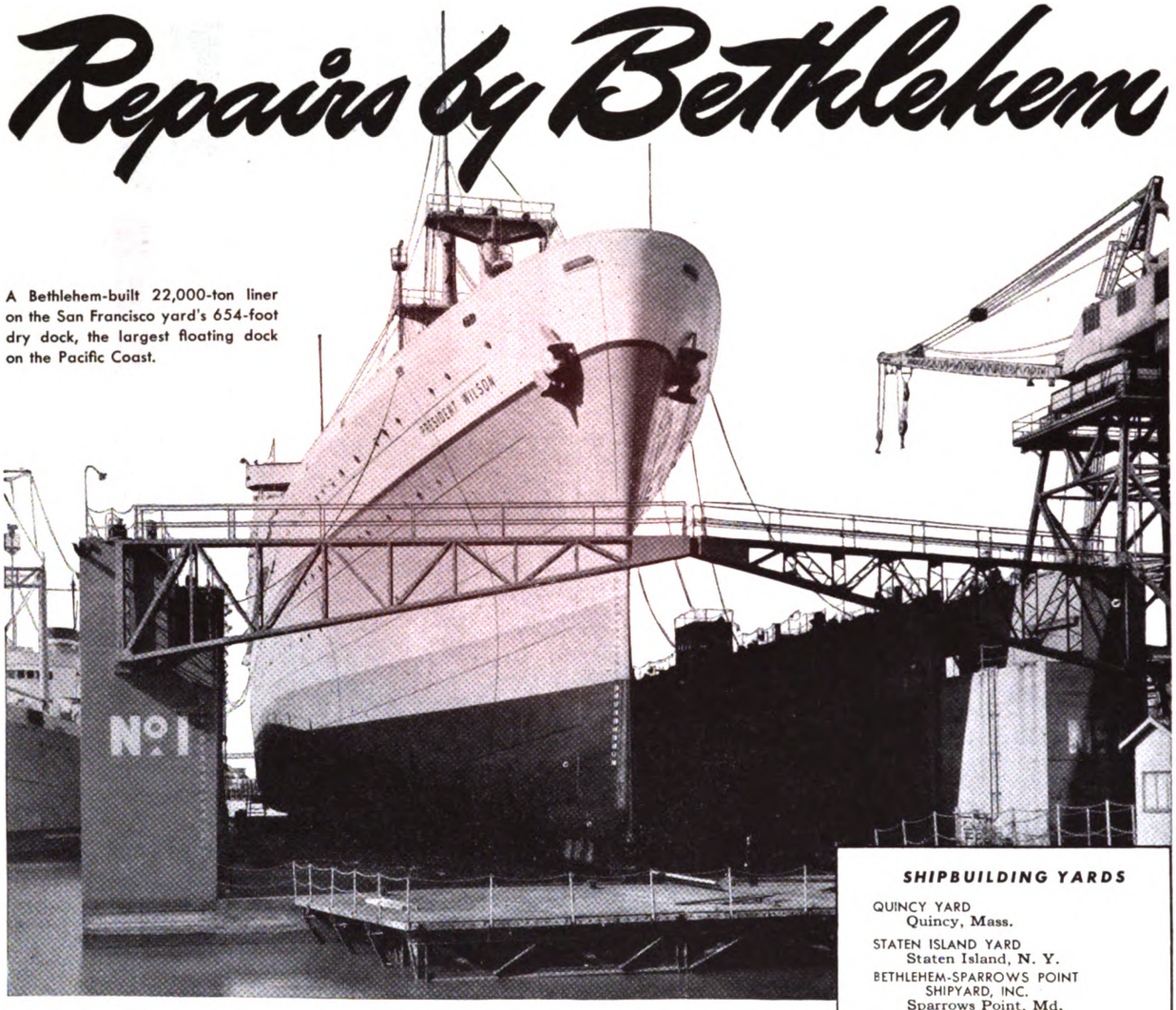


The ship's unloading conveyors can be operated either individually or in sequence. The conveyors can be started and stopped from a main control panel, and also from the remote control station shown here, equipped with seven G-E CR2940 push-button switches.

PROPULSION DRIVES
DIESEL-ELECTRIC
TURBINE-ELECTRIC
GEARED-TURBINE
MARINE AUXILIARIES
and
KEEP 'EM SAILING SERVICE

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A Bethlehem-built 22,000-ton liner on the San Francisco yard's 654-foot dry dock, the largest floating dock on the Pacific Coast.

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Located on the Atlantic, Pacific and Gulf Coasts of the United States, Bethlehem's 11 ship repair yards can handle any kind of work on any type of ship with speed, efficiency and economy *all the time.* With 39 dry docks, graving docks and marine railways, miles of pier space, and acres of modern shops and storage areas, Bethlehem's wide range of facilities offers many advantages to ship owners. Bethlehem, a completely-integrated company, has the organization, the craftsmen and the material to assure the ship operator of satisfaction *all the time.* If you want the most for your maintenance dollars always specify, "Repairs by Bethlehem."

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Brooklyn 56th St. Yard
Hoboken Yard
Staten Island Yard

BALTIMORE HARBOR
Baltimore Yard

GULF COAST
Beaumont Yard
(Beaumont, Texas)

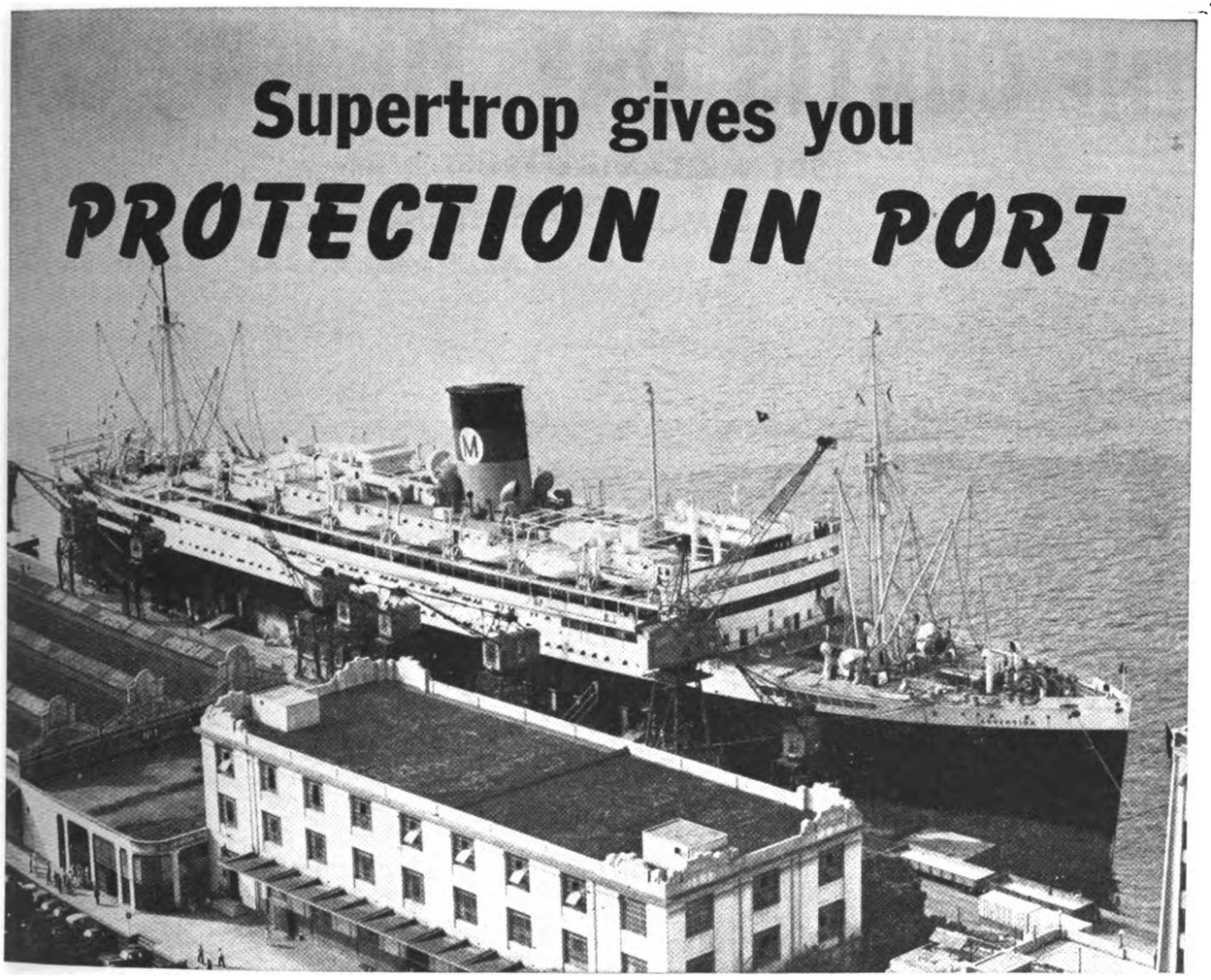
SAN FRANCISCO HARBOR
San Francisco Yard
Alameda Yard

SAN PEDRO HARBOR (Port of Los Angeles)
San Pedro Yard



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Supertrop gives you PROTECTION IN PORT



The "Argentina", a Moore-McCormack "Good Neighbor" ship. The bottom is protected with 'Supertrop' Antifouling.

International MARINE PAINTS

If a vessel could be kept continuously under way, the problem of bottom compositions would be comparatively simple. Then, protection against corrosion would be the only consideration. It is during the stop-overs, however, when fouling attaches itself. Resistance to fouling while a vessel is in port is therefore an important requirement of a bottom paint.

INTERNATIONAL "SUPERTROP" Antifouling offers the ship operator every desirable feature in a bottom composition. Its resistance to both grass and shells is unsurpassed and lasting. The protection this reasonably priced bottom paint gives to plates is indeed remarkable.

Specify INTERNATIONAL "SUPERTROP" Antifouling the next time you have your vessel painted. It will probably cost you slightly more for the job *but* you will save money from lower fuel consumption due to a clean bottom.

Send for the revised edition of "The Painting of Ships." It gives sound information on better maintenance at lower cost.



"SUPERTROP" ANTIFOULING

International Paint Company, Inc.

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THE CURTIS BAY TOWING Co.

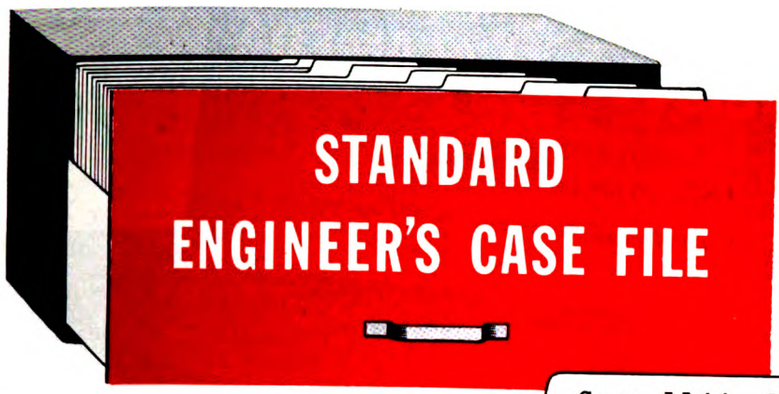
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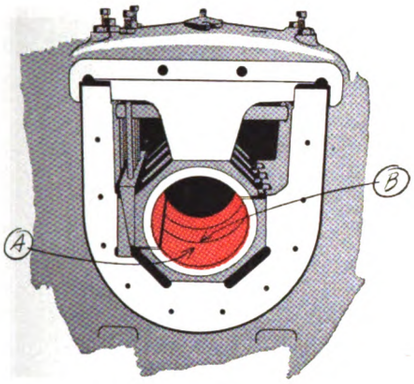
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Case 1144--Maintaining Efficient Oil Film in Refrigerating Machines.



REFRIGERATING MACHINE STUFFING BOX

Specially developed Calol Ice Machine Oils prevented loss of pressure through stuffing box glands and cylinders, and reduced wear on parts in refrigerating machines of all types. Come in six grades, 5, 6, 9, 11, 14, and 13W, to meet various subzero temperatures and the action of different chemical refrigerants.

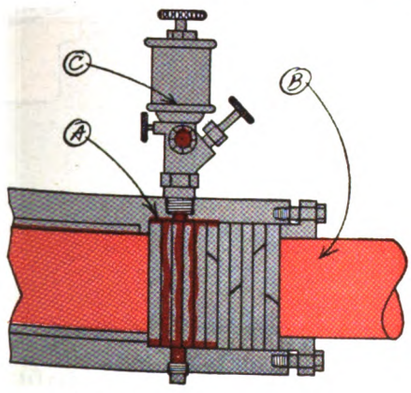
A. Extremely low pour points assure fluidity — allow proper functioning of packing in stuffing boxes and easy draining from coils and condensers.

B. Have high lubricating qualities ... do not form injurious deposits in cylinders, coils, condensers or valves.

C. May be applied through sight-feed, circulation or other lubricating devices and systems.

Calol Ice Machine Oils are chemically stable, and will separate rapidly from water and ammonia. Fully dehydrated. Have dielectric strength of 28,000 volts.

Case 1145--Reducing Lubrication Costs in Industrial and Marine Equipment.



AIR COMPRESSOR MAIN BEARING

Calol Multi-Service Oils in air compressors decreased lubricant consumption as much as 20%. Highly efficient in many machines, including Diesel engines, pumps, enclosed reduction gears and their integral bearings. Come in six grades: 45X, 50X, 55X, 65X, 75X, 85X. Approximately SAE 10 to SAE 50.

A. Contain oxidation-resistant compounds ... prevent formation of varnish and lacquer on bearing surfaces, engine cylinders, pistons, etc.

B. Special compound assures lubrication at high temperatures — has inherent tendency to "run toward" hot surfaces ... spreads uniformly and rapidly.

Other additives in Calol Multi-Service Oils help remove lacquer and varnish from machine parts and keep them dispersed, and prevent excessive foaming of oil. May be used in all types of oiling systems.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A STANDARD OF CALIFORNIA JOB-PROVED PRODUCT

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TODD at SAN FRANCISCO and ALAMEDA

25-acre yard at Alameda includes 4 piers totaling 1,914 linear feet; wharf—1,560 feet long; 2 drydocks of 10,500 and 14,000 ton capacities.

San Francisco facilities consist of Pier 36 (1,229 linear feet) and 36,000 square feet of shops.

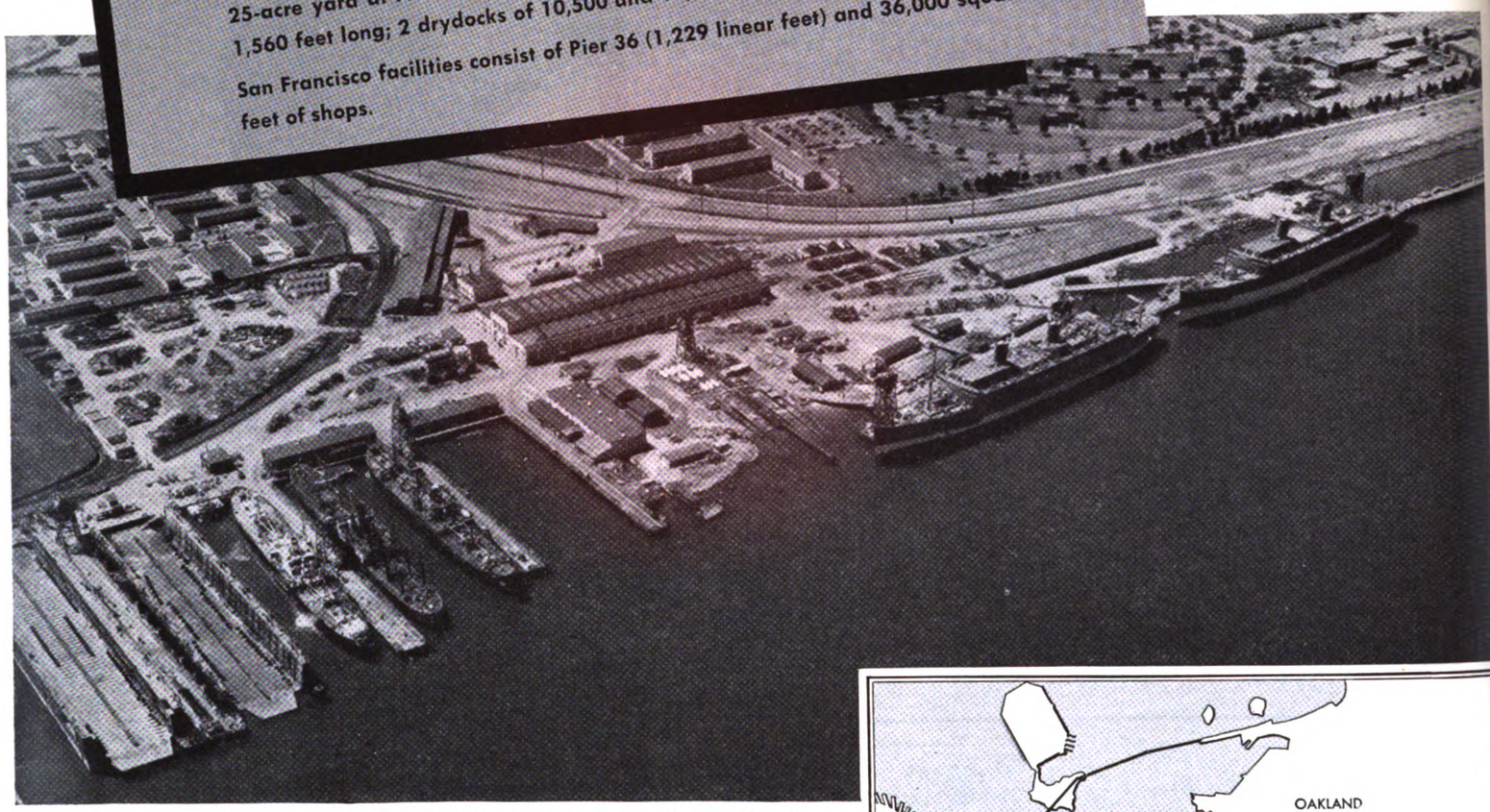
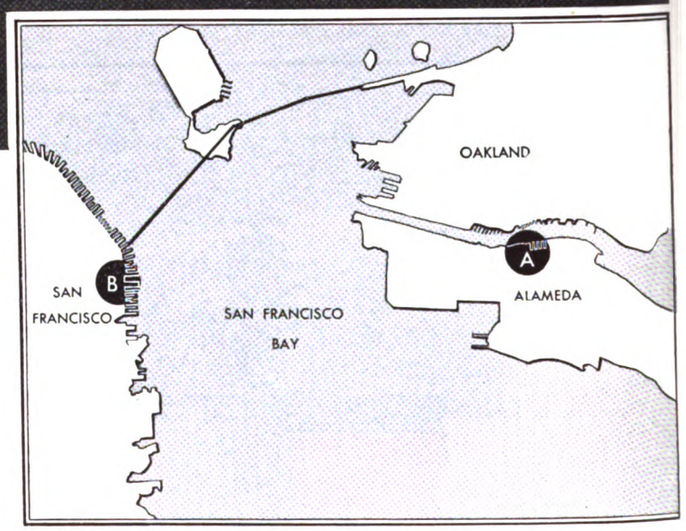


PHOTO ABOVE—Airview of Todd Pacific Shipyards Corporation plant at Alameda.



AREA A—Alameda yard, on San Francisco Bay, diagonally across from the Golden Gate.

AREA B—Pier 36 and Beale Street shops, on San Francisco's Embarcadero.

Over 50 years of good workmanship in repairing, converting and building ships of every type are reflected in all Todd shipyard operations. Todd plants—located on the Pacific, Gulf and Atlantic coasts—are staffed by experts in every phase of ship construction. Major conversion or routine repairs—Todd has the **specialists, the facilities and the experience to handle your job with speed and economy.**

Mobile service for ships at dockside or at anchor.

TODD

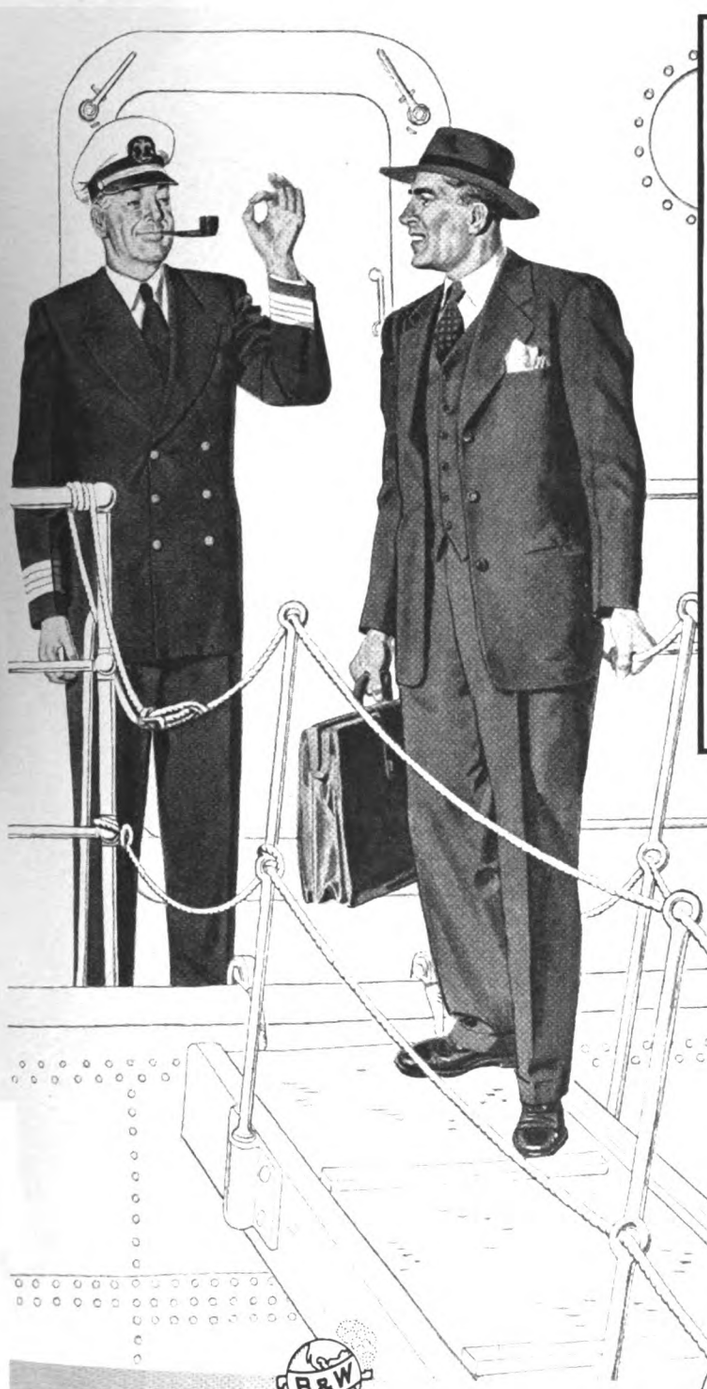
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"The Chief is very well satisfied"...

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This is typical of hundreds of B&W Service Reports which show the way to boiler room economies through less brickwork maintenance and boiler outage.

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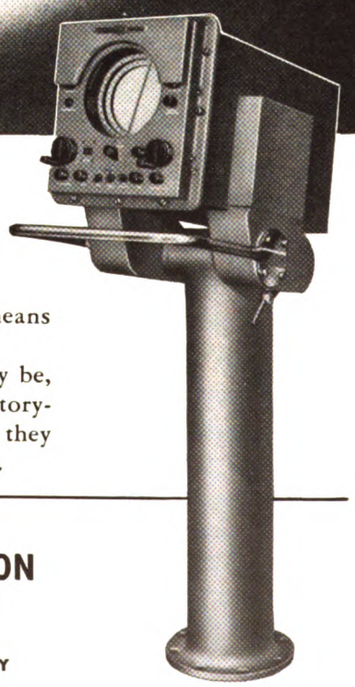
ON THE PACIFIC COAST: C. C. MOORE & CO., 450 MISSION STREET, SAN FRANCISCO

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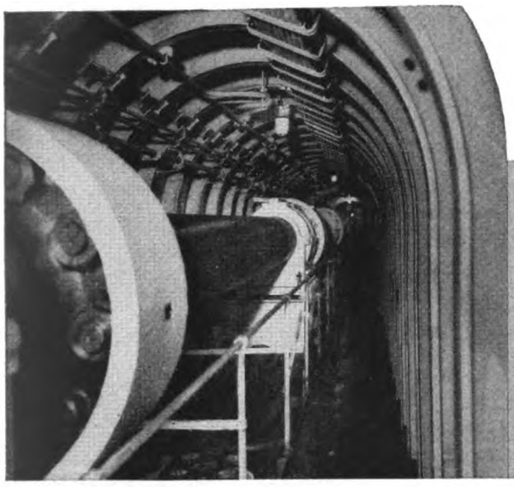
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SHAFT ALLEY Chatter

American-Hawaiian Moves To New York

American-Hawaiian Steamship Company January 1st moved its headquarters from San Francisco to New York and turned Pacific Coast operations over to its wholly-owned subsidiary agent, Williams, Dimond & Company, San Francisco.

In announcing this move, Lewis A. Lapham, president, said there would be no curtailment or change in any of the American-Hawaiian intercoastal services and pointed out the consolidation would lead to considerable savings in overhead and geared the operation to offset increasing operating costs.

Retirement of three veteran American-Hawaiian west coast operating executives came with this change. They were Thomas G. Plant, vice president in charge of operations; A. E. Stow, Pacific Coast operations manager and Captain N. J. Kane, marine superintendent.

W. Dearborn Clark, vice president in charge of traffic for American-Hawaiian, becomes the senior officer of his company on the Pacific Coast, as President Lapham has moved to New York. Robert L. Gray, Atlantic Coast operating manager, succeeds Mr. Plant as operating manager with headquarters in New York.

Ernest L. McCormick, president of Williams-Dimond, announced his firm's office would move to the American-Hawaiian space in the Matson Building, San Francisco.

Williams-Dimond has staffed its new intercoastal department with former American-Hawaiian personnel. Joseph S. Blackett, with the company since 1925 moves from the post of assistant operating manager to that of general manager of Williams-Dimond. Charles S. MacIntyre becomes operating manager at San Francisco in charge of terminals and stevedoring and captain W. I. Stevens moves from assistant marine superintendent to marine superintendent.

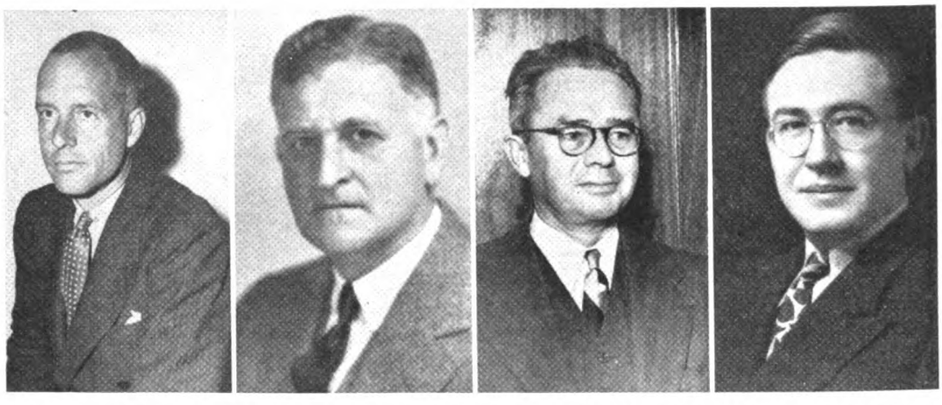
Fred Ritchie continues as superintending engineer and Dick Streets has been transferred from Seattle to San Francisco to be port engineer.

Harry M. Christensen is port steward, succeeding the veteran E. E. Voellings who retired last September.

E. M. Slevin, former purchasing agent is now general claims agent. West Coast purchasing is under the direction of E. H. Mishler, assistant operating manager.

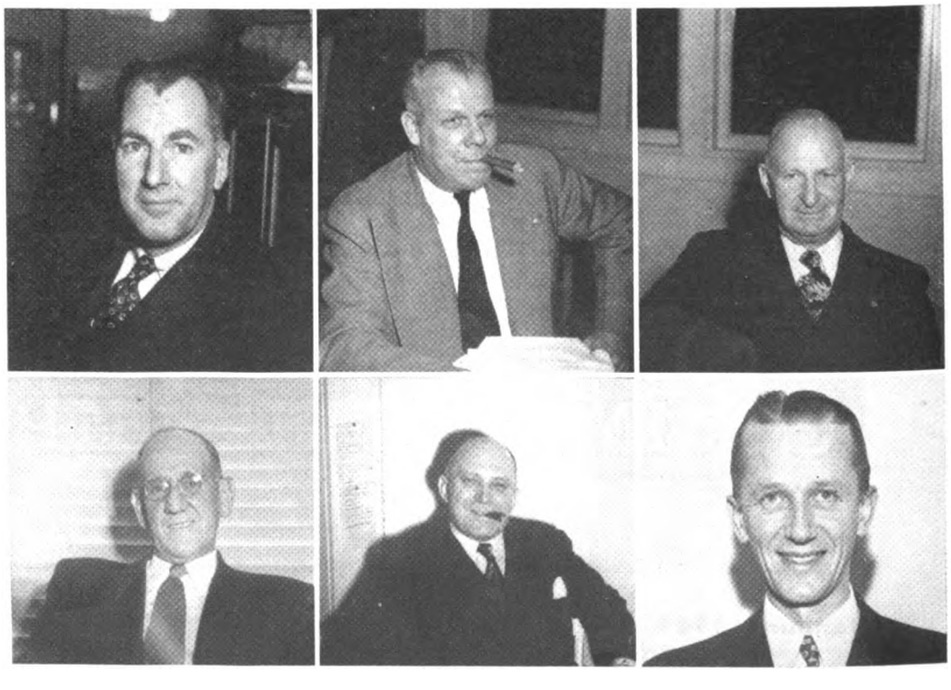
A. W. Simmons is acting district manager at Los Angeles and N. A. Moore district manager at Portland and H. M. Burke at Seattle.

American-Hawaiian has had its headquarters in San Francisco since 1923. The company was founded in 1898 and from its inception until 1923 it was represented on the Pacific Coast by the Williams-Dimond firm. Now this status is resumed.

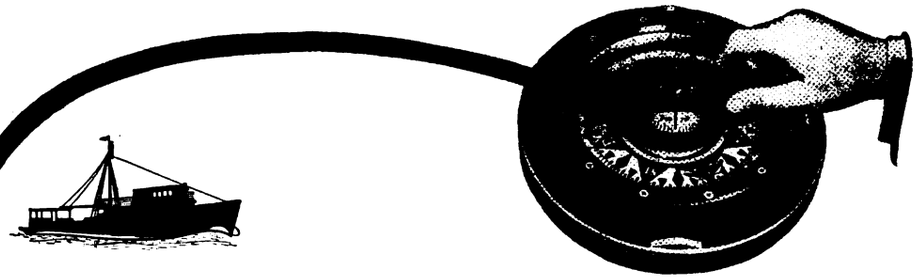


AMERICAN-HAWAIIAN MOVES TO NEW YORK—WILLIAMS, DIMOND TAKES OVER OPERATIONS ON PACIFIC COAST . . . Top row, left to right: LEWIS LAPHAM, President, American-Hawaiian; E. L. McCORMICK, President, Williams, Dimond; W. DEARBORN CLARK, Vice President, American-Hawaiian Pacific Coast; ROBERT L. GRAY, Operations Manager, American-Hawaiian, New York.

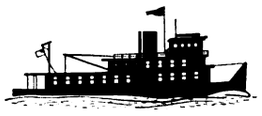
Second row, left to right: Williams, Dimond men on the Pacific Coast—JOSEPH BLACKETT, General Manager; CHARLES S. MacINTYRE, Operations Manager for Terminals and Stevedoring; CAPTAIN W. I. STEVENS, Marine Superintendent.



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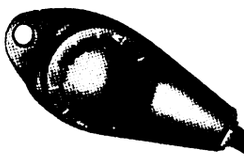


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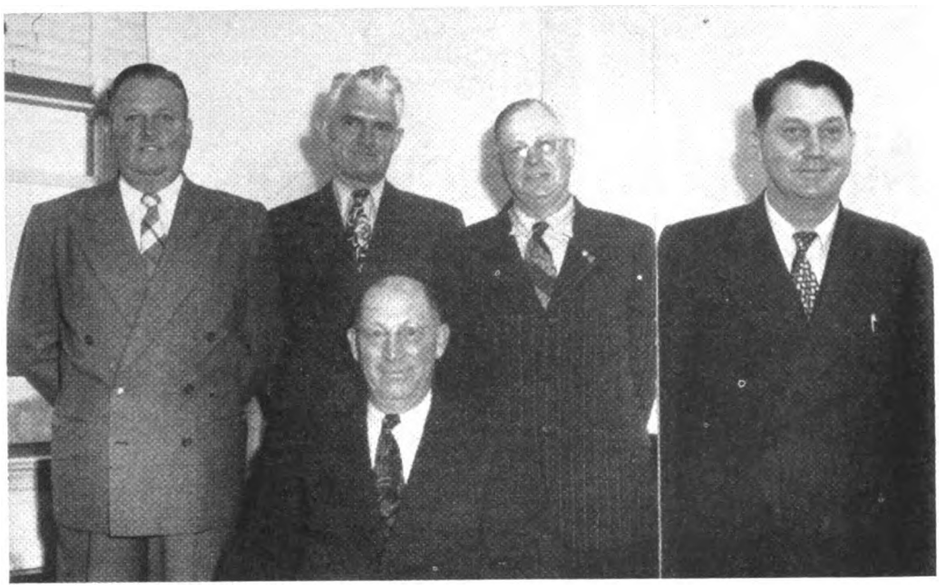
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SHAFT ALLEY (continued) Chatter



WEST COAST PERSONNEL OPERATING TEXACO'S TANKSHIPS . . . Seated, DAN DOBLER, Superintendent of the company's Marine Department. Standing, left to right: FLOYD G. NELSON, Assistant Superintendent; J. R. DEAN, Personnel Supervisor; C. V. PETERSON, Port Engineer; TROY E. CLONINGER, Barge Dispatcher.

Personnel Operating Texaco's Tankers

West coast tankship operations of The Texas Company are directed by a group of veterans at Wilmington, Calif., headed by Dan Dobler, superintendent of the company's marine department, Pacific Coast division.

Mr. Dobler, like several of his associates, went with Texaco when that firm purchased the California Petroleum Corporation in 1928. He has been marine superintendent since 1929, is vice president of The Society of Port Engineers, Los Angeles, and is slated to head that organization in 1949.

Assistant to Mr. Dobler at the Wilmington terminal is Floyd G. Nelson, who has been stationed there 22 years. Mr. Nelson, too, is a former Calpet man.

Port engineer is C. V. Peterson, who went to sea first in 1908 "pushing the bottom of the oil can" as an oiler. He was with Calpet, and has been port engineer for Texaco since 1944.

J. R. Dean, personnel supervisor on Mr. Dobler's staff, has been with the Texas company 19 years, 13 of which were spent in New York.

Barge dispatcher is Troy E. Cloninger, who has held that post four years. Earlier he was barge captain for Calpet and Texaco and has been in the service 23 years.

These men are the shoreside executives for Texaco's three coastwise tankers, the T-2 ss CONTRERAS, the mv RHODE ISLAND and the older ss ARKANSAS.

The Texas Company also is agent at Los Angeles harbor for Overseas Tankship Corporation.

Pan-Atlantic Resumes Coastwise Passenger Run

Coastwise passenger service between New Orleans and New York and other Gulf and Atlantic ports was resumed last month for the first time since World War II.

The service was put into operation by the Pan-Atlantic Steamship Corporation, a subsidiary of Waterman Steamship Corporation. W. B. Garner, executive vice-president of Waterman, said the ss IBERVILLE, one of four vessels assigned to the run, opened the service when she sailed from Mobile. He said the 10,600-ton cargo-type ship has accommodations for twelve passengers.

The other three similar vessels are the ss ANTINOUS, ss DE SOTO and ss TOPA TOPA. The four vessels carry 1000 tons more cargo than Liberty ships previously making the run, Garner said, and reduce sailing time as much as three days. Ports of call besides New Orleans and New York include Tampa, Panama City, Miami, Baltimore and Philadelphia.

⚓ ⚓ ⚓

Swenson Represents New Orleans in Washington

Richard B. Swenson has been appointed representative of the Board of Commissioners of the Port of New Orleans in Washington, D.C., succeeding Lewis I. Bourgeois, Director of Commerce for the Port, who has been temporarily filling the post.

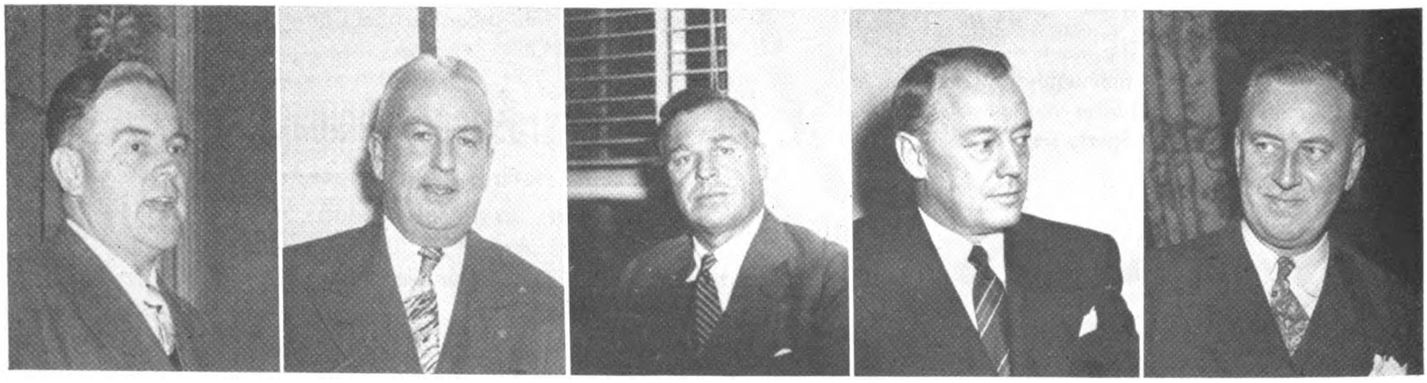
James H. Crumbley, head of the Statistical Department of the Port Commission, will replace Mr. Swenson as Public Relations Counsel.

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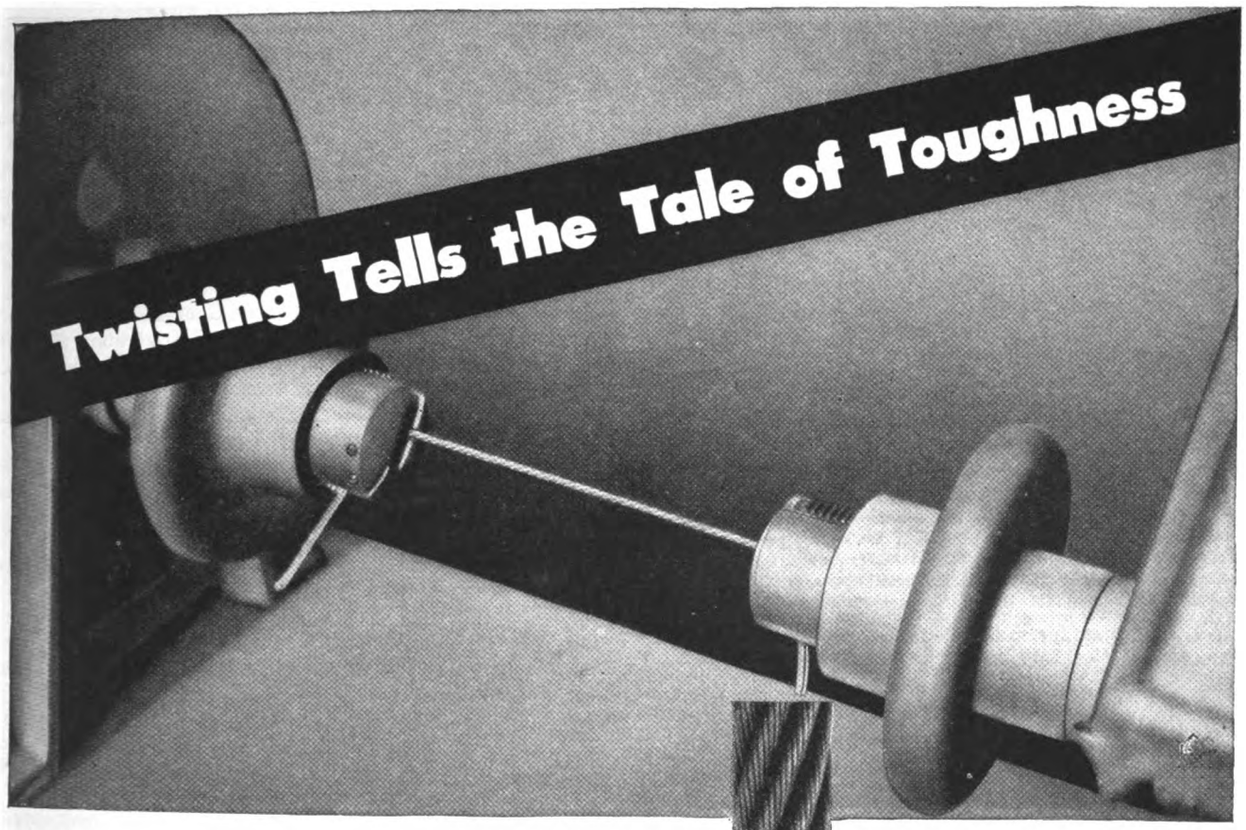
New Firm Offers Port Service to SS Companies

Port captain and port engineer service in San Francisco is offered by the new firm of Jones & Ferguson, marine surveyors, to steamship companies not having agency facilities in that port. The firm is composed of R. F. Ferguson, formerly with Norton-Lilly Steamship Company and Maritime Ship Repair, and Captain Frank A. Jones, who has been with the Army Transport Corps and the American Bureau of Shipping. They are located at 230 California Street.

SAN FRANCISCO PROPELLER CLUB ELECTS 1949 OFFICERS . . . Left to right: President, E. H. HARMS, Operating Manager Pope & Talbot; First Vice President, K. C. TRIPP, Pacific Coast Manager Moore-McCormack; Second Vice President, R. A. McLAREN, President Pacific Transport Lines; Third Vice President, GEORGE KILLION, President American President Lines; Secretary-Treasurer, EUGENE F. HOFFMAN, Director of Public Relations APL.



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Here we see an 8" piece of rope wire being twisted on its own axis. The revolutions necessary to break the wire are counted and only those coils are accepted which test at least 10% above American Petroleum Institute specifications for wire rope. In addition to being an indication for toughness, the torsion test reveals whether the wire is free from steel defects such as seams and cups.

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SHAFT ALLEY (continued) Chatter

Eugene F. Moran Writes Book About Tugboats

Eugene F. Moran, chairman of the board of the Moran Towing and Transportation Company in New Orleans, who went to work more than 60 years ago on his father's tug, is writing a book about his tugboat experiences. The book will be called "Tugs and Towing" and is to be ready for publication this winter.

Mr. Moran is considered one of the world's greatest authorities on tugs. His company's ships have established marine history by their achievements, such as towing a gold dredge from New Orleans to Barranquilla, Colombia, a distance of 1,611 miles, in sixteen days.

Mr. Moran has six children and seventeen grandchildren and has a tug named after each of them.

COMMERCIAL SHIP REPAIR held a very successful get-acquainted "launching party" at San Francisco last month to celebrate the opening of its new ship repair yard at the old Maritime Ship Repair plant at Bay and Taylor. Among those present in the accompanying pictures were:
Top row, the Speakers' table: left to right, BARNEY TROUT, manager of Commercial Ship's Tacoma Division; CAPTAIN VANCE TROUT, Coastwise Line; BOB STREIFF, Pacific Tankers and 1949 president of The Society of Port Engineers, San Francisco; JIM FEATHERSTONE, co-owner Commercial Ship, Seattle; CHARLES WESTLIN, States Marine; DAVID NEILSEN, United States Maritime Commission.

Middle row, left to right: CAPTAIN JOHN F. PAUL and W. E. BRENNAN, States Marine Corporation; R. J. TULLY, Winchester Line, and CAPTAIN G. W. GRIFFIN, States Marine.

Lower row, left to right: FRED ARCHBOLD, formerly head of the San Francisco office of Lloyd's Register of Shipping; A. G. SAFHOLM, Coastwise Line; KELLY RANDALL and LOUIE DEPPMAN, Sudden & Christenson; ED GRAFF, Grace Line and BILL SIZEMORE, United States Army Transport Corps.



NW Naval Architects Schedule 1949 Programs

At a well attended meeting in December at Seattle of the Pacific Northwest Section of the Society of Naval Architects and Marine Engineers, a paper presented by Captain Logan McKee, planning officer, Puget Sound Navy Yard on the subject "The Use By The Germans of Hydrogen Peroxide For Production of Power In World War II" received rapt attention and aroused great interest.

Announcement was made of future meetings as follows: February 8, 1949, paper by George Henderson on "Modern Absorptive Refrigeration"; April 29, 1949, paper by Dr. Hans Mueller on "Circulating Type Model Testing Basins"; August 27, 1949, at Gearhart, Oregon, paper by Paul Forsythe on "Hydraulic Torque Converter on Winch Drives"; December 9, 1949, paper by George C. Nickum on "Fish Processing Vessels."

Another paper planned is one by H. C. Hanson on "The History and Development of Tunnel Sterns."

The executive committee has submitted for the membership committee J. L. Sweetin, Commercial Ship Repair, vice chairman; G. C. Snyder, W. C. Nickum and Sons; A. J. Squire, Canadian Marine Inspection Service; A. E. Farr, Todd Shipyards Corporation; and G. J. Ackerman, American Mail Line.

Names to the nominating committee are B. A. McLean, American Bureau of Shipping; G. J. Ackerman, American Mail Line; and P. F. Spaulding, Todd Shipyards Corporation.

⚓ ⚓ ⚓

United States Lines Named Agents for Tankers Co., Inc.

United States Lines has announced their appointment as husbanding agents on the Pacific Coast for Tankers Company, Inc., of New York. Tankers Company, Inc. operates a large fleet of tankers for Navy account, similar to the operation of Pacific Tankers, Inc., for which United States Lines are also agents.

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Adds Ninth Ship to Gulf Service

The Holland-American Line has added a second converted baby flat top to its Gulf fleet, Frederick R. Wierdsma, general manager in New Orleans, announced.

The ship, the ss ALMDYK, made her trial run in the Gulf of Mexico and sailed from New Orleans on her maiden voyage December 10. This is the ninth ship to be added to Gulf service.

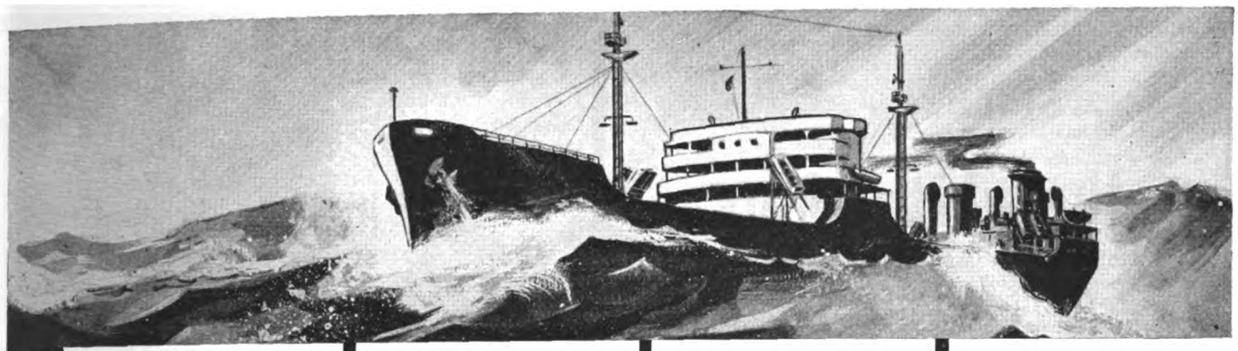
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Harry Kelly Receives Present from Ireland

Harry Kelly, president of the Propeller Club of New Orleans, and Thomas Burke, program chairman, have received special shillelaghs from Ireland.

The gift was presented by Michael J. Cousins, consul-general of Ireland in New Orleans, at a Propeller Club luncheon.

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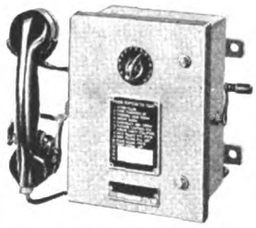
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Today, such new crops as abaca (manila hemp), African palm oil and certain hard woods are progressing favorably, along with the traditional nutritious foods of Middle America—bananas, cocoa, coffee, sugar—and form part of the cargoes continually moving north, while—southbound—the Great White Fleet carries the products of northern farms and factories.

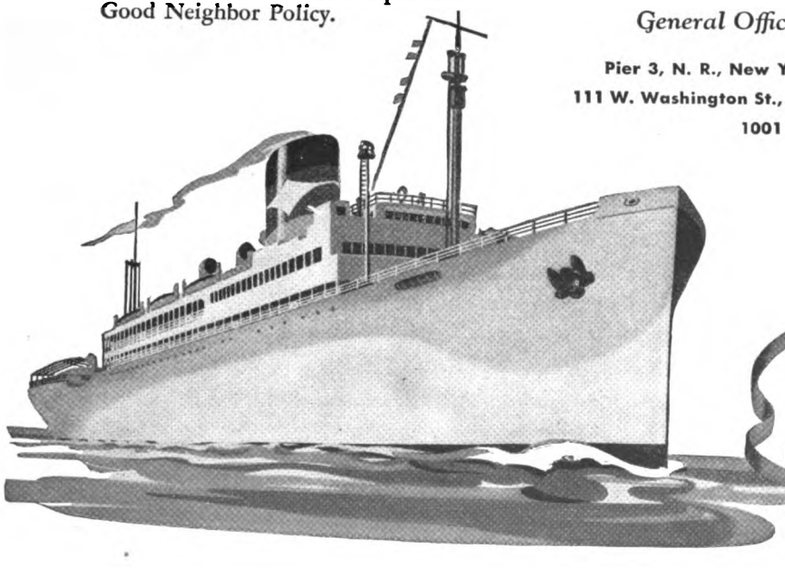
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OF AMERICA'S MARITIME INDUSTRIES
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MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

JANUARY, 1949 Vol. 44, No. 1

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ACCOUNTING AND CIRCULATION
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Now, Our Anchor Is 100% American

A reader chided us, asking how we reconciled The LOG's editorial efforts for the American Merchant Marine with the anchor trademark long used on the front cover. This, he advised, was "along the lines of a foreign anchor." He suggested we "Americanize" it.

He had us on the spot. Our alibi was that the original artist, having subversive intentions, put one over on us. That wasn't a good answer, so we asked the reader who noted it, Mr. E. J. McGuiness, vice president of The Baldt Anchor, Chain & Forge Division, The Boston Metals Company, for an accurate drawing of a strictly American type anchor.

The new anchor, loyal to the American Merchant Marine, appeared for the first time on the December cover and will be used henceforth. We thank Mr. McGuiness for bringing us into line. It proves again that an expert should always be consulted in the first place.

⚓ ⚓ ⚓

Another LSM Converted to Coastwise Lumber Carrier

Plans for converting a war-built LSM into a coastwise lumber carrier are announced by W. R. Chamberlin & Company, San Francisco steamship operators.

The vessel, a twin-screw craft, built by the Brown Shipbuilding Company at Houston, Texas, is powered by two 1,800 h.p. Fairbanks, Morse & Company Diesel engines. Other equipment aboard includes two Sharples oil purifiers, Worthington pumps, a Sperry gyro and a 440-volt Westinghouse generator.

J. G. Kelly, superintending engineer of the Chamberlin company, will direct the conversion. In December he had the vessel at the Bethlehem yard in Alameda for haulout and underwater inspection.

The LSM will be fitted with a new house and it is likely a radar and ship-to-shore telephone will be installed. She is expected to have a maximum speed of 13.1 knots, a cruising radius of 4,307 miles and capacity for carrying approximately 650,000 board feet of "packaged" lumber, put aboard and taken off by shoreside cranes.

It is possible the Chamberlin firm will convert a second LSM and it is reported Coastwise Lines, San Francisco, too, is planning same work on two other craft of this type.

⚓ ⚓ ⚓

Gulf Shippers Profit By East Coast Strike

Some large shipping companies and a freight forwarder in New Orleans agree that the city's port activity showed an increase during the longshoremen's strike on the East Coast.

Gerard J. Tujague, vice president of A. E. Hegewisch, Inc., freight brokers, said:

"There has been quite an increase. A lot of our clients say they are shipping here now because of East Coast and West Coast strikes. It's a general increase, felt especially in less than carload shipments usually routed to the East Coast. Mostly, these shipments are from the Midwest."

O. B. Cloudman, Alcoa Steamship Company, Inc., Gulf traffic manager, said he believed an increase his company has felt is caused by Midwest shipping switching to New Orleans from New York on Latin American cargoes.

"Their shipping via New York is historical precedent," he said. "Now we may be able to hold on to this new business which should have been coming here all along."

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P.N.Y.A. Urges Funds To Improve Channel

The Port of New York Authority has strongly urged the U. S. director of the budget to give high priority in the allotment of Federal funds for channel improvement to the Port of New York.

The importance of the Port of New York as the nation's gateway, both in peace and war was stressed by the Authority which urged the director of the budget to provide allotments of about $5,000,000 for completion of new channel deepening and widening projects, and about $3,000,000 for maintenance of project depths, much of which work was curtailed during war and postwar years.

"Only one per cent of the total national appropriation or $400,000 was allotted this area for the fiscal year 1947-48, as compared with normal prewar allotment of $5,000,000. For the current year, $2,200,000 has been alloted to this area out of a national total of $73,000,000 or 3 per cent," Howard S. Cullman, chairman of the bi-state agency said.

"There exists today a backlog of about $20,000,000 of work which has been authorized but to which no funds have been allotted. This includes work on some of the most important channels in the harbor which handle millions of tons of traffic annually and along the shores of which are located both public and private terminals provided at local expense."

The operation of deep draft modern tankers requiring 33 feet of draft is seriously handicapped by failure to complete the authorized 35 foot New York and New Jersey channels and the Newark Bay channel. The harbors in the gulf, where these ships are loaded, have such a depth.

There is authorized work still to be done in widening and deepening the main Ambrose and Hudson River channels, which are navigated by large passenger liners used in national emergency as transports.

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Tonnage handled over public wharves at the port of New Orleans increased by 76,227 tons in October over the previous month.

E. H. Lockenberg, director of port operations, said 484,246 tons of goods were handled by thirty steamship companies in October compared to 338,019 in September.

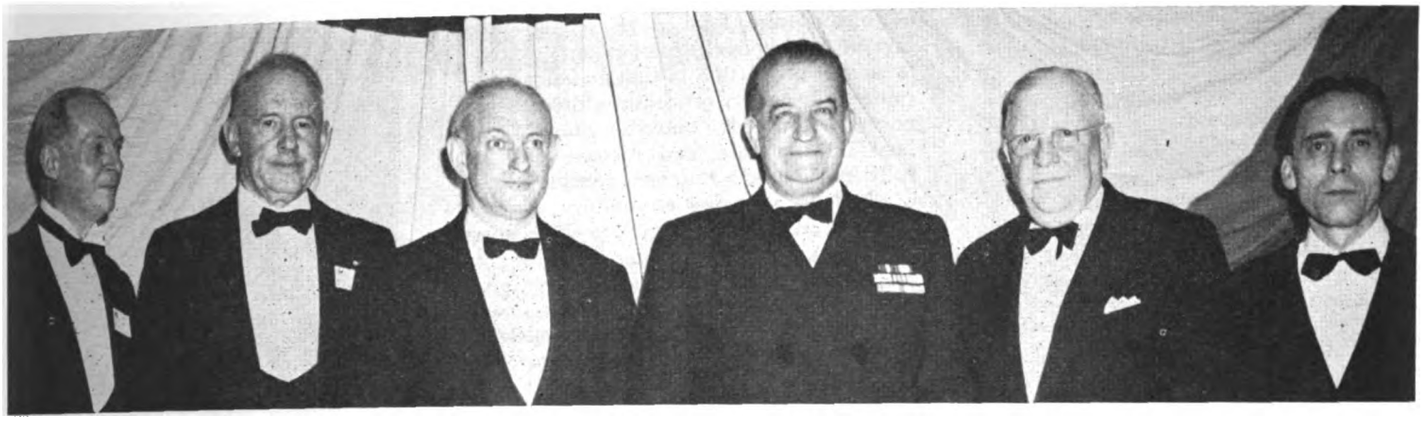
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INTERNATIONAL TRADE MART...

New Orleans' answer to competitive ports.

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WINNERS OF AWARDS presented at 56th annual meeting of the Society of Naval Architects and Marine Engineers . . . left to right—WILLIAM BINLEY and COMMANDER FREDERICK A. HUNNEWELL, U.S.C.G. (Ret.,) awarded Fifty year Membership Certificates; VICE ADMIRAL EDWARD L. COCHRANE, U.S.N., (Ret.) President of the Society; VICE ADMIRAL EARLE W. MILLS, U.S.N., Chief, Bureau of Ships, winner of "The David W. Taylor Gold Medal"; C. RICHARD WALLER, Vice President and Chief Engineer, DeLaval Steam Turbine Co., winner of "The President's Award"; MATTHEW G. FORREST, Senior Assistant Naval Architect, Gibbs & Cox, Inc., winner of "The Captain Joseph H. Linnard Prize."

NAVAL ARCHITECTS CONFERENCE

The highest membership total ever reached in the 56-year history of The Society of Naval Architects and Marine Engineers was achieved at the annual meeting held November 10 to 13, 1948, when 127 new members were elected, making a total membership of 5528.

Elected president of the Society for a two year term succeeding Vice Admiral Edward L. Cochrane, U.S.N. (Ret.) was John B. Woodward, Jr., president of the Newport News Shipbuilding and Dry Dock Company.

New Officers

Election of officers to fill vacancies and terms expiring resulted in the selection of the following slate:

Honorary Vice-Presidents—Arthur B. Homer, Roger Williams; Vice-Presidents for term ending December 31, 1951—*C. W. Middleton, Harold E. Saunders, *George G. Sharp, *Henry Williams; Vice-President for term ending December 31, 1949—David Arnott; Vice-President for term ending December 31, 1950—Earle W. Mills.

Council Members representing Members and Associate Members for term ending December 31, 1951—Walter L. Green, *James B. Hunter, *Harvey F. Johnson, *John F. Nichols, *W. Selkirk Owen, *S. A. Vincent; Council Member for term ending December 31, 1949—Charles D. Wheelock; Council Members for term ending December 31, 1950—William Francis Gibbs, Daniel D. Strohmeier, O. B. Whitaker; Council Members representing Associates for term ending December 31, 1951—*B. F. Campbell, *Harold S. Falk, *Albert V. Moore.

Treasurer—O. B. Whitaker; Secretary—*Wilbur N. Landers; Assistant Treasurer—C. C. Knerr; Assistant Secretary—*Arlo Wilson; Editor—*H. H. Brown.

*Incumbent.

1949 Executive Committee

J. B. Woodward, President, ex-officio; David Arnott, W. E. Blewett, Jr., Edward L. Cochrane, Homer L. Ferguson, Walter C. Hemingway, J. H. King, Emory S. Land, Emmet J. McCormack, John F. Metten, C. W. Middleton, Earle W. Mills, William S. Newell, Joseph W. Powell, H. Gerrish Smith, O. B. Whitaker, Treasurer ex-officio.

The tenth award of "The David W. Taylor Medal" for "Notable achievement in naval architecture and marine engineering" was made to Vice Admiral Earle W. Mills, U.S.N., Chief, Bureau of Ships.

"The Captain Joseph H. Linnard Prize" was presented to Matthew G. Forrest, senior assistant naval architect, Gibbs & Cox, Inc., New York City, for his paper "Application and Use of Aluminum Alloys in Ship Construction" presented at the Society's Annual Meeting in 1947.

"The President's Award" for 1948 went to C. Richard Waller, vice president and chief engineer, DeLaval Steam Turbine Co., Trenton, New Jersey, for his paper "Propulsion Gearing." Honorable mention was made of a paper prepared jointly by Wm. I. H. Budd and Otmar Praznik, engineers at the Quincy, Mass. yard of the Bethlehem Steel Co. "A Comparison of Recent High Pressure Marine Installations."

Fifty year membership certificates were presented to William Binley and Commander Frederick A. Hunnewell, U.S.C.G. (Ret.) and a certificate of honorary membership was presented to Sir Amos L. Ayre, K.B.E. Chairman of the Shipbuilding Conference of Great Britain.

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FACTORS IN DESIGN OF MARINE BOILERS

By GEORGE W. KESSLER
Babcock & Wilcox Co.

The design of marine boilers is a process of correlating basic design data to meet the characteristics prescribed by the naval architect. The process requires a thorough understanding of the expected operating conditions and the application of theoretical heat transfer and fluid flow data, modified as necessary by empirical factors derived from research on similar types of boiler units. Boiler design also involves stress analyses, consideration of fabrication and maintenance problems and a knowledge of developments in materials and other fundamental research.

Many factors influence the design and selection of boilers for a particular installation. These include customer preference, space and weight limitations, regulatory code requirements, operating conditions, basic performance requirements, general power plant design, available fuel and method of firing, means of supplying combustion air and procedure for evacuating the products of combustion from the furnace, water conditions and type of propulsion. Although all of these factors contribute heavily in the development of the design, they must be so correlated that the boiler proportions selected satisfy performance demands.

Competitive boiler designs are frequently compared by analysing performance criteria, particularly those based upon heat release and absorption rates. In general, with the exception of the furnace heat absorption rates, none of these design criteria is really satisfactory. However, they are all useful provided their limitations are clearly understood. In order to utilize fully the designer's talents he must not be handicapped with arbitrary restrictions which have no real importance as design criteria.

In design procedure the boiler designer uses the same fundamentals regardless of the steam pressure and temperature

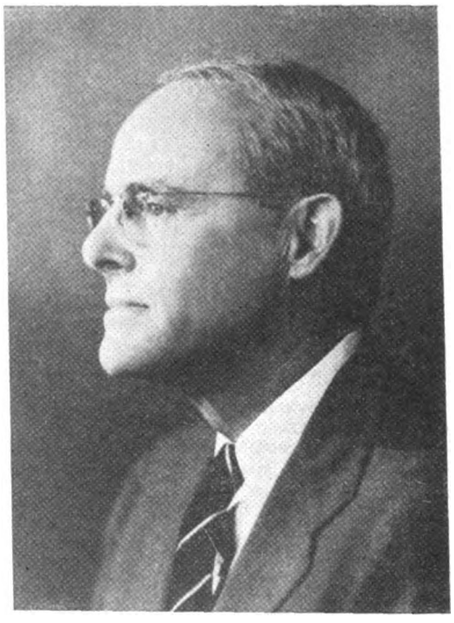
*Abstracts from paper presented before The Society of Naval Architects and Marine Engineers Annual Conference, November 10 to 13, 1948, New York, N.Y.

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range, manual or automatic operation, or the requirements for additional heat reclaiming devices such as air heaters and economizers. Experience indicates where basic design data must be modified by empirical factors to account for size differentials, arrangements of surfaces and cleanliness of combustion gases. Experience also provides the balance between theoretical and practical design considerations which assures long time operation of economically designed boiler units with a minimum of maintenance and trouble.

In design analysis and the development of the boiler components—furnaces, water screens, superheaters, tube banks, economizers and air heaters—there is no set procedure which can be followed in all cases and by all designers. However, unless generalized design procedures are established the final development may involve the expenditure of time and labor far out of proportion to that actually warranted. In design procedures the all important relationship between temperature, heat transfer rate, and surface must be fully recognized. Further, considerations of the effects of the circulatory characteristics on boiler design, the disposition of heat absorbing surfaces and the effective use of pressure drop to minimize alloy requirements, and the arrangement of heat absorbing surfaces to minimize outages for cleaning and maintenance are of utmost importance.

In the final alignment of surface arrangements economic readjustments should be made to reduce boiler size, weight and cost by utilizing each type of component surface to the fullest extent.



NEW PRESIDENT of the Society is JOHN B. WOODWARD, JR., President, Newport News Shipbuilding & Dry Dock Co.

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MODERN TANKERS

By

HAROLD F. ROBINSON
Chief Naval Architect
Bethlehem Steel Co.

JOHN F. ROESKE
Assistant Naval Architect
Sun Shipbuilding & Dry Dock Co.

A. S. THAELER
Assistant Marine Engineer
Pittsburgh Steamship Co.

Oil tankers now building in the United States are of larger capacity and higher speed than those produced in past years. In the past decade, the deadweight carrying capacity ranged from 13,000 to 17,000 tons, with an average speed of about 14½ knots. The current building program chiefly comprises ships of 26,000 to 30,000 tons deadweight, with speeds exceeding 16 knots. The steadily growing demand for petroleum products, and the greater distances they must be carried, because of the opening of the Near East oil fields, have increased the importance of the most economical oil transportation. The smaller vessels built in the past were suitable for former requirements and short hauls; but the movement of greater amounts of oil over much larger distances justifies larger and more efficient carriers. The current program is indicative of this trend.

Vessels now building are designed for the maximum draft consistent with the harbor and channel depths on their intended routes. Future increase in deadweight capacities will require vessels with proportions departing from previous and current practice.

The increase in the use and extent of welding in lieu of riveting has resulted in lighter hull structures for the same strength, thus increasing the deadweight-carrying efficiency. Many tankers today are completely welded, although some shipbuilders and shipowners prefer a few riveted connections in an otherwise all-welded ship.

Under present United States tonnage measurement laws, to obtain the minimum net tonnage (on which certain fees and charges are based) the volume of the machinery space must be made larger than actually required for the machinery and its operation. This is an artificial restriction on the design of the ship, and accomplishes no useful purpose today. Reconsideration of the existing laws should be undertaken to avoid useless and costly design limitations.

Almost without exception, tankers building in the United States today are powered with mechanically geared steam turbines. The widespread use of turbo-electric propulsion for 525 T-2 type tankers, constructed for the Maritime Commission during the war, was dictated by the wartime lack of gearcutting facilities, rather than for reasons of inherent superiority. With the increase in propulsive power required by the large and fast tankers of today, higher steam pressures and temperatures may be used, and fuel economy improved.

An analysis of relative operating costs for vessels of varying size and speed, operating over routes of varying length, indicates that minimum operating cost per ton of cargo is obtained by use of the largest practicable design of vessel, driven at moderate rather than high speed. With fuel costs at their present levels, higher speeds increase operating cost appreciably, due to increased weight and cost of propelling machinery and bunkers. For very long hauls this is particularly true. Where military or other considerations dictate high speed, it should be recognized that a definite financial premium must be paid for this feature.

OFFICERS OF THE SNA&ME are: WILBUR N. LANDERS, Secretary; ARLO WILSON, Assistant Secretary; O. B. WHITAKER, Treasurer; J. H. KING, retiring Treasurer; and HAROLD WICK, Chairman of the Publicity Committee.



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ECONOMIC SELECTION OF STEAM CONDITIONS

By
DOUGLAS C. MacMILLAN
Chief Engineer
George G. Sharp

MARK L. IRELAND, JR.
Newport News Shipbuilding & Dry Dock Co.

How far a commercial ship operator should go in increasing steam conditions aboard ship is primarily an economic question with higher first cost and carrying charges to be weighed against the expected reduction in fuel cost. The solution of the problem for any particular ship requires a determination of the fuel consumption and the initial cost of steam plants of the desired power but designed for various steam conditions. Studies have previously been made of comparative steam cycles and considerable information published showing the thermal efficiency that may be expected with various steam conditions, but comparatively little information has been presented previously concerning the initial cost.

The authors present data on the fuel performance and initial cost of marine steam plants in sizes ranging from 6,000 to 20,000 shaft horsepower per shaft, and with steam conditions ranging from the present standard of 450 psig 750 F to a high of 1250 psig 950 F. They also discuss the economics of selection of components and auxiliaries including turbo generator sets, feed pumps, number of stages of feed heating and condensers.

The results of the fuel and initial cost studies are presented in such a manner that selection may be made on the basis of capital charges and fuel cost applying in any particular service. Based upon usual values, the results presented indicate the following general conclusions:

1. Steam conditions of 450 psig 750 F would be selected normally for installations of about 6000 shaft horsepower. There is some improvement for 450 psig 850 F, but the incentive is not great even when considering the probability of higher fuel prices.

2. Steam conditions of 615 psig 850 F would be selected normally for higher powers for both cargo and combination ships. If higher fuel prices or lower fixed charges are anticipated, then 900 F at the same pressure shows a slight improvement, which, however, hardly appears to be worth the risk. In any case there seems to be little incentive to increase further in steam pressure. In this connection it is pointed out that steam conditions exceeding 600 psig 825 F are offered for standard stationary power plants only for unit ratings of 20,000 kilowatts or greater.

3. For a tanker of 12,500 shaft horsepower, the use of higher fuel prices will show appreciable savings for various steam conditions higher than 615 psig 850 F. In each case the expected savings should be weighed against the probable risk. There appears to be more incentive to increase the temperature than to raise the pressure, but the risk may also be greater.



RETIRING PRESIDENT of the Society is VICE ADMIRAL EDWARD L. COCHRANE, U.S.N. (Ret.)

CONTROLLABLE PITCH PROPELLERS

By COMMANDER LEWIS A. RUPP, USN

Controllable-pitch propellers for ships were first considered seriously in the middle nineteenth century in order to permit feathering the propeller blades when operating with sails only and to provide flexibility when using both sails and steam engines for ship propulsion. A semi-controllable-pitch propeller was installed in the MERRIMAC (renamed the VIRGINIA) in her historic encounter with the MONITOR in 1862.

Most early controllable-pitch mechanisms lacked sufficient ruggedness to withstand the large control forces imposed on them, with the result that failures were frequent. Kaplan turbine-type hydraulic mechanisms developed in Switzerland in 1934 and in Sweden in 1937 proved that controllable-pitch propellers could be made reliable in diverse marine applications. For multi-purpose Diesel tugs, fishing craft, and other types which operate with widely varying towing loads, controllable-pitch propellers permitted utilization of full engine power during all conditions of operation, provided superior maneuvering at slow speeds around docks and when handling trawls and nets, provided greater deceleration in emergency stopping maneuvers, and often times permitted improved fuel economy under cruising conditions. These advantages for towing craft, coupled with the advent of the marine gas turbine, prompted the marine industry in all countries to take renewed interest in controllable-pitch propellers in recent years.

The problem of reversing with a gas turbine installation is not easily solved by conventional means. Astern turbines, such as are commonly used in steam installations, are nearly impossible in gas turbine applications because of excessive windage losses and dangers from overheating. Reverse gears above 3000 horsepower have not yet been developed and hydraulic reversing couplings, though a possibility, sacrifice efficiency through transmission losses. Available reversing means for larger installations include only electric drive and the controllable-pitch propeller. The former requires greater first cost, weight, space, and transmission losses. The latter has the disadvantages of a possible slight loss in propeller efficiency due to its larger hub size and a more vulnerable location of vital mechanisms, though it has the additional advantage of greater combined turbine and propulsion efficiency at part load by virtue of reducing the propeller pitch and thereby increasing the prime mover speed to a more efficient range.

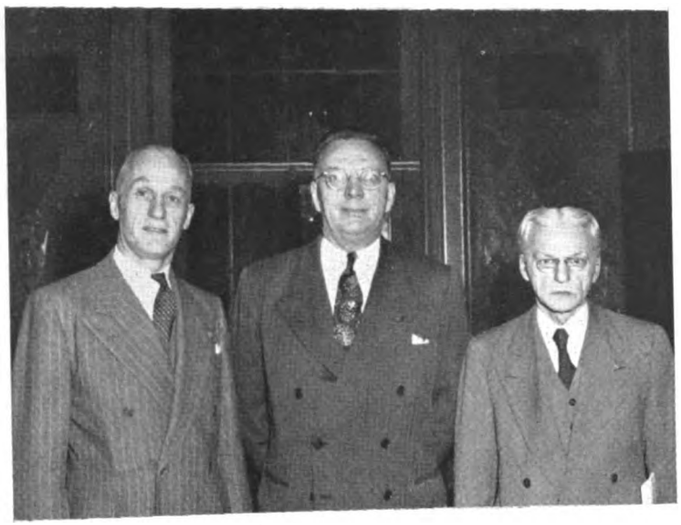
To evaluate the potentialities of controllable-pitch propeller applications in present day, as well as future prime movers, the U. S. Navy fitted experimental installations in a small Diesel harbor tug in 1940, a 28,000-horsepower, twin-screw, turbine-powered World War I destroyer, U. S. S. DAHLGREN, in 1941, and in a 1000-horsepower Diesel harbor tug, YTB502, in 1946. In addition, over 2400 controllable-pitch propellers, each pow-

*Abstracts from paper presented before The Society of Naval Architects and Marine Engineers Annual Conference, November 10 to 13, 1948, New York, N.Y.

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DOUGLAS C. MacMILLAN, Chief Engineer, George G. Sharp, and MARK L. IRELAND, JR., Newport News Shipbuilding & Dry Dock Co., co-authors of the paper "Economic Selection of Steam Conditions for Merchant Vessels"; and GEORGE W. KESSLER, The Babcock & Wilcox Company, author of the paper "Procedures and Influencing Factors in the Design of Marine Boilers."



A. S. THAELER, Assistant Marine Engineer, Pittsburgh Steamship Company; HAROLD F. ROBINSON, Chief Naval Architect, Bethlehem Steel Company, Shipbuilding Division, Quincy; and JOHN F. ROESKE, Assistant Naval Architect, Sun Shipbuilding & Dry Dock Company: co-authors of the paper "Modern Tankers."



THREE PACIFIC COAST NAVAL ARCHITECTS, left to right, W. C. NICKUM, W. C. Nickum & Sons, Seattle; HAROLD C. HANSON, Naval Architect and Marine Engineer, Seattle; MICHAEL J. RYAN, Naval Architect and Marine Engineer, San Francisco; and JAMES L. BATES, Consultant to the U. S. Maritime Commission, who retired this year as Technical Director.



WESTINGHOUSE EXECUTIVES at the Naval Architects meeting, left to right, B. M. BROWN, Charge of Marine Sales, East Pittsburgh; HERBERT H. ROGGE, Vice President, New York; J. E. PAYNE, Manager Industry Sales Depts., East Pittsburgh; and, EVERETT F. CLARK, Manager Marine Division, New York.

ered by light weight, non-reversible Diesel engines and absorbing 900 shaft horsepower, were installed in approximately 100 patrol craft and 1100 infantry landing craft which saw action in all theatres of operation during World War II.

Complete trials of YTB502 were conducted in 1946 to determine the centrifugal, frictional, and hydrodynamical blade spindle control forces and to evaluate the free route, towing, dead pull, and emergency maneuvering performance as compared to a sister tug with reversing Diesel engines and a fixed-pitch propeller. The controllable-pitch propeller installation had equivalent performance in free route, permitted an increase of over one-third in the towrope pull at dead pull, and stopped in 25 per cent less time and distance in an emergency stopping maneuver. Analyses of various Diesel installations also indicate that fuel savings of 5 to 10 per cent can be effected at cruising power by increasing the pitch and thereby increasing the engine mean effective pressure.

The DAHLGREN trials in 1941 indicated that considerable losses can result from large propeller hubs with improper fairing forward and aft of the propeller, but other tests and installations indicate that losses from properly faired controllable-pitch propeller hubs need never exceed 1 to 2 percent. The DAHLGREN trials showed that turbine-driven vessels with controllable-pitch propellers can be stopped in less than two-thirds of the distance as compared to reversing turbines and fixed propellers, and that cruising fuel savings of 10 to 20 per cent can result from using decreased pitch and corresponding higher turbine speeds.

Experience with various pitch-changing mechanisms indicates that both hydraulic and electro-mechanical devices can be made reliable. Emphasis should be placed on simplicity, reduction in friction forces, elimination of backlash, and minimizing hub diameters. Methods are now available for achieving the proper blade designs for controllable-pitch propellers in order to attain maximum overall efficiency and minimum control force requirements for the mechanism.

The appreciable advantages of controllable-pitch propellers in providing increased towing power, flexibility, maneuverability, and fuel economy for tugs, fishing craft, and other vessels which operate at variable loads, as well as for providing flexibility and a convenient reversing means for marine gas turbine power plants, point the way to continued developments and increased applications for future ship propulsion.

Larry Peabody, until recently with Alaska Transportation Company, formerly with Todd Shipyards Corporation; W. C. Nickum and Sons; and well known as a consulting marine engineer, has been engaged by Olson Boiler and Machine Works, Inc., Seattle.

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MARINE SALVAGE

By ADMIRAL WILLIAM A. SULLIVAN USN (Ret.)

Marine salvage, or the saving of ships which are in a perilous condition, is a hazardous undertaking. There are several recognized branches—the work of towing in disabled vessels is called rescue tug work; the salvage of vessels stranded or sunk in exposed locations is called offshore salvage; the salvage of vessels sunk in sheltered waters is called harbor salvage; cargo salvage involves the salvage of cargo from ships too badly wrecked to be salvaged as a whole.

Offshore salvage involves work of a most difficult character—time is a most important factor, for ships sunk or stranded in exposed positions are at the mercy of the elements. Successful offshore salvage requires ships which are especially constructed and fitted out with gear for the purpose and which are manned by especially trained and experienced personnel.

Most offshore salvage is done to refloat stranded ships. The salvage of a stranding can be influenced by many factors—perhaps the most important is the amount of buoyancy which the ship lost in stranding. The amount of this lost buoyancy is equal to the weight of the ship which bears on the beach. If it can be eliminated, the ship will float free. Sometimes the rising tide or the removal of cargo, stores, etc. will so reduce the amount of the weight resting on the beach that this will happen. If it does, positive action should be taken to remove the ship for it may be then in danger of broaching. Ships broadside on the beach are in a most perilous condition for they are not only in danger of breaking up, but they will also be much more difficult to take off.

Tugs are sometimes used to pull on stranded vessels. The pull which can be developed by a tug is relatively small and, unless a ship is nearly afloat, there is little chance of a tug freeing it.

The drag needed to pull a stranded vessel from the beach is that which is needed to overcome the friction developed under the bottom of the stranding. The amount of this friction is a function of the weight of the ship resting on the bottom. It varies with the character of the material in the ground under the ship. Any reduction in the amount of lost buoyancy caused by the removal of weight or by a rising tide will reduce the force needed to drag the ship off.

The most positive and effective method for dragging off stranded ships is the use of beach gear. Beach gear consists of heavy anchors planted offshore and connected to the stranding with wire rope hawsers. On deck, these hawsers are connected to purchase gear which are worked by the ship's winches. Several sets of purchase gear may be used on one stranding.

The use of beach gear is often combined with the work of lightening the ship by removing cargo, stores, fuel or other weights. It is often combined with other methods used to salvage stranded ships. When ships are aground on sands or gravels susceptible to scouring, the services of a twin-screw tub may be used to scour out the sands under the ship so as to permit it to sink to a deeper draft.

When ships are stranded on rock or coral, the use of jacks is sometimes combined with that of beach gear for freeing these vessels. Jacks are placed on the top of spuds which are ranged along the side of the vessel and pressure is exerted on the jacks on the under side of the sheer strake. This transfers some of the weight of the ship from the ground under it to the spuds and it lessens the force of friction resisting the pull of the beach gear.

Most sunken ships are raised by the use of pumps which are reliable, and which are less apt to develop difficulty than is the use of compressed air. Before sunken ships can be pumped, any holes through which water can enter must be patched and the patches must be installed by divers. The attachments used by divers to fasten underwater patches are generally unsuited for holding the patches against pressure. Underwater patches, therefore, must be applied on the outside of the ship's structure so that they will bear with the pressures obtained when pumping is undertaken. When divers cannot get access to the outside of a sunken ship in the way of a hole which needs patching, difficulty is encountered and the use of compressed air as a possibility for raising the ship is considered. Tankers, combat vessels and particularly submarines are, by their construction, particularly suited to the use of compressed air and, when such vessels are sunk, they are frequently raised by the use of compressed air.

*Abstracts from paper presented before The Society of Naval Architects and Marine Engineers Annual Conference, November 10 to 13, 1948, New York, N.Y.

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POWER PERFORMANCE OF TEN TANKER HULLS

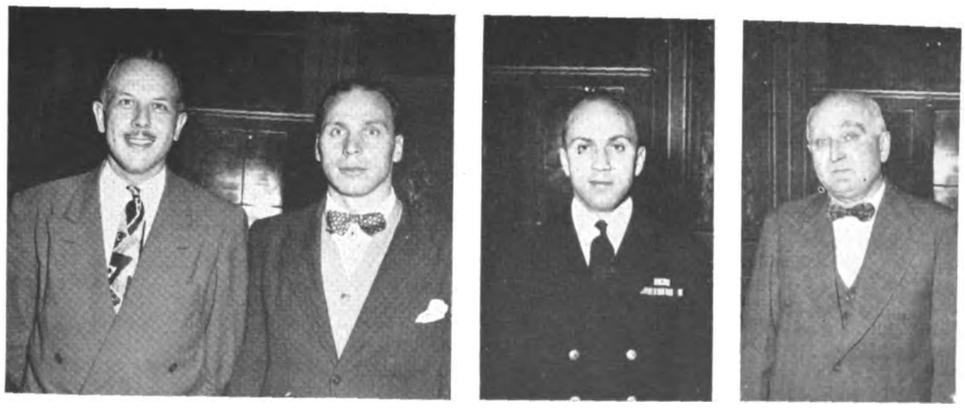
By RICHARD B. COUCH and MANLEY ST. DENIS
U.S. Navy David Taylor Model Basin

In view of the large number of oil tankers currently being constructed by the maritime nations of the world, and the present accelerated interest in tanker design in the leading shipyards of this country, with the resulting large number of requests for model tests at the David Taylor Model Basin, it was believed desirable to make immediately available to naval architects such pertinent data as could be assembled and published relating to the power performance of modern tanker hulls. Accordingly, permission was obtained from the designers of ten hulls, for which models were on hand at the David Taylor Model Basin, to retest these models and publish a comparison of the results. All of the vessels of the group are designed for approximately the same deadweight capacity, length, and speed, although they vary appreciably in hull form and propeller revolutions.

Since the factors involved in the choice of a hull form include considerations other than those known to the model basin, the basis for the comparison of the designs was limited to the effect of hull form on the resistance and power as determined from smooth water model basin tests.

To establish a common basis for comparison, all models were tested at the same displacement-length ratio of 152

RICHARD B. COUCH and MANLEY ST. DENIS, both of the U.S. Navy David Taylor Model Basin, co-authors of the paper on "Comparison of the Power Performance of Ten Tankers"; COMMANDER LEWIS A. RUPP, USN, author of the paper "Controllable Pitch Propellers"; and REAR ADMIRAL WILLIAM A. SULLIVAN, USN, author of the paper "Marine Salvage."



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AT THE MEMBERS' DINNER left to right, ROGER M. LUKE, Asst. Engineer, and A. M. BUTTERFIELD, Chief Engineer, Hyde Windlass Co.; R. P. RICE, District Manager, Industrial Div., New England District, General Electric Company.



H. P. BISH, Manager, Aircraft, Federal & Marine Divisions, General Electric Company; LESTER M. GOLDSMITH, Chief Engineer, Atlantic Refining Co.; J. W. BELANGER, Manager, Turbine & Gear Divisions, General Electric Co.

and all data have been worked out to apply to a 600-foot vessel displacing 32,-800 tons with a service speed of 16 knots. The models were towed for resistance and self-propelled with the propellers originally designed for the vessels.

The lines of the ten hulls together with the following test data are presented in the paper:

(a) The wave profile corresponding to the service speed of 16 knots.

(b) Curves of propeller characteristics obtained from open water tests.

(c) Curves of the following plotted against ship's speed.

(1) Effective horsepower (EHP)
(2) Shaft horsepower (SHP)
(3) Revolution per minute (RPM)
(4) Wake fraction (w)
(5) Thrust deduction fraction (t)
(6) Propulsive coefficient (P.C.)
(7) True slip (S_t)
(8) Apparel slip (S_a)

The power and coefficient data predicted from the model test results for all vessels at a speed of 16 knots are given in the table attached.

An analysis of the resistance and propulsion data has been made and certain conclusions drawn. Although the number of vessels in this group is too small to permit extensive generalizations, it appears justifiable to draw the conclusions that follow. It should be emphasized that these are valid only for the speed range of the tests and for the variation in form characteristics of the vessels in the group.

1. For a given length and displacement all variations of a design will have sensibly the same wetted area and thus the same "plank" frictional resistance.

2. The form resistance diminishes with increasing angle of entrance of the load waterline.

3. The optimum prismatic and waterplace coefficients decrease with increasing speed-length ratio. This is well known, but it should be noted how great a difference in resistance results from even a small change in the prismatic coefficient at the higher speeds at which wave making is important.

4. The optimum length of entrance increases with speed-length ratio.

5. A bulbous bow is advantageous at least at all speeds at which wave-making is not negligible.

6. At the speed-length ratio of 0.65 a rather wide variation is permissible in the choice of hull coefficients.

7. The primary factors which affect shaft horsepower are the resistance of the hull and appendages, the propeller diameter, and the propeller revolutions per minute.

8. Propeller diameter is the most important factor influencing the wake fraction.

9. If the practical considerations involved in the selection of propelling machinery are excluded, the slowest turning propeller having the largest diameter is to be preferred.

Propulsion data for vessels at a Speed of 16 knots

Ship	EHP	SHP	RPM	t	w	1-t / 1-w
A	7260	8840	80.6	0.216	0.338	1.185
B	7660	10150	88.9	0.210	0.355	1.225
C	7140	9850	119.0	0.230	0.420	1.328
D	7180	9730	91.7	0.195	0.340	1.220
E	7360	9580	81.6	0.224	0.350	1.194
F	7080	8640	79.0	0.200	0.360	1.250
G	7185	9450	80.4	0.229	0.370	1.222
H	7260	9040	90.2	0.202	0.360	1.247
I	7500	10690	110.9	0.250	0.410	1.271
J	7200	9790	109.1	0.204	0.400	1.327

Ship	Err	EHP / SHP	Prop. Diam.	EHP / EHP min.	SHP / SHP min.
A	1.103	0.821	22.87	1.025	1.023
B	1.037	0.750	22.41	1.082	1.175
C	1.057	0.724	18.56	1.008	1.140
D	1.018	0.738	21.71	1.014	1.126
E	1.041	0.769	22.00	1.040	1.109
F	1.048	0.819	22.00	1.000	1.000
G	1.014	0.760	22.00	1.015	1.094
H	1.067	0.804	21.85	1.026	1.046
I	1.027	0.702	19.58	1.059	1.237
J	1.009	0.736	19.59	1.017	1.133



A. KENNEDY, JR., Asst. to Manager-Engineering, Aircraft, Federal & Marine Divisions, General Electric Co.; HARRY M. BARDIN, Manager of Marine Sales, New York Office, General Electric Co.



TWO MEN FROM MAINE, G. BAER CONNARD, Technical Assistant to Vice Presidents, Bath Iron Works Corp.; E. K. HENLEY, Manager, Marine Division, General Electric Co.; and S. H. TOWNE, Chief Engineer, Bath Iron Works Corp.

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avoid knotting the pipe lines



Oil has become the source of life to industry and commerce throughout the world island, and supply lines over the face of the earth begin to appear more and more like the veins of the human body.

Tankers and supertankers are slipping down the ways in larger numbers than during any other peacetime period. In the current shipbuilding program, contracts for 62 tankers and supertankers, totalling 1,618,000 deadweight tons, have been awarded to American Shipyards as of September 1st, 1948.

As world-wide dependency on oil increases, we cannot afford "blood clots". A good heart means a long life free of break-downs; steam generating equipment by Foster Wheeler means high availability, low maintenance costs, and uninterrupted service — an established fact in the marine field. In addition to the well-known Foster Wheeler steam generators, FW supplies economizers, condensers, air ejectors, distillers, and other marine accessories.

Write for . . . Bulletin M-48-13

FOSTER WHEELER CORPORATION
165 Broadway, New York 6, New York

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WASHINGTON Report

By The LOG's Own Correspondents

Discriminations Against American Shipping Increasing

The U. S. Maritime Commission, now deep into its investigation of discriminatory practices of four Latin American nations against American-flag shipping, has been requested by the industry to investigate new discriminations by seven other countries and islands.

Under Section 26 of the Shipping Act of 1916 the Commission has the authority to investigate certain discriminatory actions of foreign governments which impose burdens upon vessels of the U. S.

The industry's request to the Commission covered discriminations by Portugal, France and its colonies, Italy, Egypt, Cyprus, Turkey and Gibraltar.

Meanwhile the industry is proposing to request legislation from the 81st Congress to correct the discriminations. In the last Congress Representatives Bland and Latham introduced such legislation, although too late for hearings and possible enactment.

Here's an example of the most recent discriminations:

Portuguese immigration laws require American vessels to pay an annual license fee for passenger vessels calling there amounting to nearly $4,000. In addition, requirements are placed upon Portuguese shippers to use Portuguese flag vessels in preference to any others if they are available.

In France and her colonies a peage tax is imposed, which is actually a tax against the cargo for which French authorities insist upon collecting from American vessels.

In Italy, for example, the emigration authorities can insist on Italian cooks, Italian medical assistance to be employed, an Italian Government inspector to be carried, structural requirements which are now archaic, plus a permit to indulge in the booking of third class business in Italy which permit entails subjection to the Emigration Service with reference to rates, currency, etc.

In Egypt, freight rates are reduced for goods carried on Egyptian vessels together with preferred consideration for goods passing through customs and in the loading and discharging operations for Egyptian flag ships.

In Turkey a tax is assessed amounting to nearly 4½% of the net freight paid for shipments carried by non-Turkish ships although the tax is not payable if shipments are made by Turkish vessels.

In almost every instance of discrimination, it is significant to note that they are practiced at government direction in order to build up or strengthen that nation or country's Merchant Marine.

Great Lakes Passenger-Freight Service Plans Revival

Five Great Lakes package freight and passenger shipping lines are making efforts to expand their operations, and are seeking C-4's which would be converted for such operations.

The five lines have formed a new association known as the Great Lakes Package Freight and Passenger Ship Association. While they are desirous of buying C-4's from the Maritime Commission, (of which there are 44 with no prospective buyers) they feel the floor price of approximately $1,500,000 each is too high to permit the type of conversions necessary to make them useful for their operations. Moreover the superstructures of the vessels would have to be removed in order for the vessels to clear the bridges spanning the waterways leading to the Lakes.

In early December the lines were reported trying to work out a method under which the Commission would be able to reduce the floor prices of the C-4's to enable the Lake operators to purchase a sizeable number. The five steamship lines now making up the association comprise about 15 ships of more than 100,000 gross tons.

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Canadian Shipowners May Ask Increased Operating Subsidies

Canadian shipowners, plagued with spiraling operating costs, are asking their Government for increased operating subsidies.

Operating subsidies have been paid to Canadian shipowners for nearly 50 years. Thirty-four services are now subsidized, two on the West Coast, two on the Great Lakes and 30 on the East Coast and St. Lawrence River, although last year's total payments were only about $2.200,000.

The stated purposes of Canadian operating subsidies is to assure services to areas which might otherwise be isolated wherein the volume of traffic is insufficient to enable profitable private operation.

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Scandinavian Shipping Increasing

Norway's fleet of merchant ships of over 1,000 gross tons, including the 3.7 million dwt. now on order, will total about 9 million tons in 1954, or 30% larger than the 6.9 million dwt. they possessed in 1939.

The Swedish merchant fleet is already larger than its prewar fleet, total tonnage now 2.6 million deadweight compared to about two million tons in 1939.

Radar Operator License Rules Hearing Set for January 24

National Federation of American Shipping here is now coordinating the views of an industry-wide group of manufacturers and users of radar for merchant ships for presentation to be made before the FCC on January 24. The industry group is made up of six user organizations and six radar manufacturers or service companies.

The radar operator license rules being proposed by the FCC would:

Authorize changing of fuses and receiving type tubes by personnel not holding a radar operator license; authorize actual operation of radar sets without the requirements of an operator license provided the equipment met certain specifications; require a ship radar operator endorsement on a 1st or 2nd class radio operator license to perform all other matters in connection with the ship radar equipment and make the station licensee responsible for the proper functioning and operation of the station in accordance with terms of the station license.

The U. S. Coast Guard, representatives of which will undoubtedly appear at the hearings, has indicated that some shipping concerns are not using radar, although they would like to, for fear that after use has started the Government will place hampering restrictions causing inconvenience and perhaps expense.

The Coast Guard has assured prospective users that as far as it is concerned the only action it contemplates is the inclusion of a few simple, practical questions on the operation of shipboard radar in the examinations of Deck Officers.

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Security Board Appoints Shipping Executives

Captain Granville C. Conway, president, Cosmopolitan Shipping Company, and Edmund Moran, Rear Admiral, USNR, and president of the Moran Towing Company, have been appointed director and deputy director respectively of the Department of Transportation of the National Security Resources Board.

The shipping executives will have the responsibility of developing logistics of water, rail and other transportation in the event of an emergency. The shipping industry is cooperating closely in offering its advices with respect to deepsea shipping.

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American Legion Continues Merchant Marine Program

The National Executive Committee of the American Legion, top-level planners of the 4½-million member organization, recently adopted a four point basic National Security program giving the Merchant Marine co-equal status with Army, Navy and Air Force.

The Legion's extensive educational program on a nationwide basis about the American Merchant Marine is now that organization's most active Security program.

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WASHINGTON

Four 15-minute radio programs were sent late in November to more than 1,000 radio stations. More than 250,000 pieces of literature about the Merchant Marine have been distributed in the last year, including personal letters to thousands of prominent citizens.

This year, 1949, the Legion's program will probably take on new aspects. Being considered is a national educational program which would reach the high school and college level as to the part the Merchant Marine plays in the nation's economic and national security; a continuation of its distribution of the National Federation of American Shipping motion picture, AMERICA SAILS THE SEAS, and possibly a national Merchant Marine American Legion Conference in October or November. The conference would be primarily a Legion affair with Merchant Marine Committee chairmen from each of the 48 States, the National Security Commission and other top ranking Legion officials attending.

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Merchant Marine Deferment Under Selective Service

Information was received by the Federation here from National Selective Service Headquarters that steamship operating companies who desire to request deferment for their employees on the basis of active employment in the Merchant Marine must promptly file with the employee's local boards the request for such deferment and evidence in support of such requests.

It was learned that in many instances employees have filed questionnaires with statements of employment in the Merchant Marine without a request from their employers, and registrants are therefore automatically placed in 1-A classification. The failure of the employers to make timely requests for deferment necessitates delays after employees have been classified 1-A.

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Through the Washington Hawsepipe

Representative Willis Bradley, defeated Republican from California, who had earned the respect and support of nearly all segments of the maritime industry during his service on the House Merchant Marine & Fisheries Committee, is being prominently mentioned in official circles here as a candidate for the U. S. Maritime Commission if Admiral W. W. Smith, present chairman, is not reappointed when his term expires this spring.

Predictions are being made that the Shipping Coordinating Committee, an inter-departmental committee at government level on shipping matters, will be restored shortly. Industry is seeking participation on a panel basis so that the Committee could have before it at all times the views and opinions of the private owners of the American Merchant Marine.

The industry is looking forward to recommendations soon to be forthcoming as to prevention of the spread of diseases by ships in international commerce. An expert committee on international epidemiology and quarantine of the World Health Organization met recently in Geneva, Switzerland to draft such recommendations. American representative was Dr. G. E. Dunnahoo, Medical Director, Chief of Foreign Quarantine, U. S. Public Health Service.

Industry is now trying to arrive at a policy decision regarding what is to be done with the Merchant Marine in event of another emergency. Questions to be decided are: Does private shipping favor requisition for title of vessels; requisition for use of vessels, or some combination of requisitions for title or use such as government requisition of title with shipowners statutory right of reacquisition.

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Ships and America

The new American Legion 24-page two color booklet SHIPS AND AMERICA is now being distributed throughout the United States by that organization. It is understood that copies can be obtained without charge from either the American Legion, National Headquarters, Indianapolis 6, Indiana; National Federation of American Shipping, 1809 G St. N. W. Washington 6, D.C. or Shipbuilders Council of America, 21 West Street, N.Y.

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Japanese Merchant Marine

Officials of NFAS have recently been assured by high ranking officials of State and War Departments that so far there is no fixed policy with respect to the future size of the Japanese Merchant Marine.

A report of Overseas Consultants, Inc., made to the War Department some months ago, recommended a rebuilding of the Jap fleet by 1950 to 4-million gross tons or about the same size it had in 1935. The Far Eastern Commission, which is supposed to settle the question, has not yet adopted a specific position.

The industry, through NFAS, was assured that no policy would be set by War or State until the industry had been further consulted and given the opportunity of expressing its views and presenting its arguments.

Meanwhile shipping officials of Great Britain, Norway, Sweden and Holland have been in conference with NFAS and have expressed considerable concern over the reestablishment of the Jap fleet.

The Chinese, in particular, are extremely apprehensive over any possibility of restoring Japan to an important place on the seas. It is the contention of these foreign officials that there is no justification whatever for building the Japanese Merchant Marine up to 4-million tons, and that even 2-million tons would be more than sufficient tonnage to take care of its requirements in 1950.

While these discussions were in progress, another facet developed. General Headquarters of SCAP in Japan issued an invitation for bids for agency services to be provided to Jap owned vessels operating under control of the Shipping Control Authority, Japanese Merchant Marine, at Hong Kong, Manila, Bangkok, Singapore and Calcutta. The successful bidders, according to SCAJAP, would enter into contracts with the Japanese Board of Trade subject of course to approval of the Supreme Commander.

It therefore appears to Washington officials that it is the intention of the Army to expand the operation of Jap merchant ships into the foreign trades.

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Policy Not Set On Charters & Sales

The industry, up to the first week in December, had not formulated a policy with regard to any extension of the Ship Sales Act which expires the last of next month.

There are many in the industry who feel the authority of the Maritime Commission to sell and charter vessels should not be extended; that the Act has been in effect nearly three years affording ample opportunity for anyone to become a shipowner; that shipowners have already purchased 622 of the war-built ships at a total cost of $659,000,000.

It appears likely however that the Commission will ask for an extension, at least on some modified basis. Just what its policy will be will probably be determined after it is known to what extent American ships will continue to participate in ECA cargoes and in materials shipped to occupied areas.

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Industry Boiling Mad Over British Disparagement

American shipping is boiling mad over a quotation appearing in the Sunday Express of London, England, November 14, 1948, under caption "Britain Not in Right Place in Air." The article quotes Sir Whitney Straight, chief executive of British Overseas Air Corp. as having advised the Airways Council of supervisory staffs, executives and technicians, as follows:

"The situation is not satisfactory at all —no self-respecting American would travel in an American ship. He prefers the QUEEN ELIZABETH or the QUEEN MARY. We want to see the day when no self-respecting American will travel in an American airliner."

Protestations have been made both to the State Department and British Embassy.

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Thursday and Friday, May 12 and 13, are tentatively announced as the dates for the spring meeting this year in San Francisco of The Society of Naval Architects and Marine Engineers. Harold Champlain, United Fruit Company, president of the Northern California Section of the Society, announces that the meeting dates of his group this year will be January 31, March 31, May 31, September 29 and November 30.

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Automatic Temperature and Pressure Controls

How modern regulators can be used most effectively in marine power plants

By JOHN S. LESLIE*

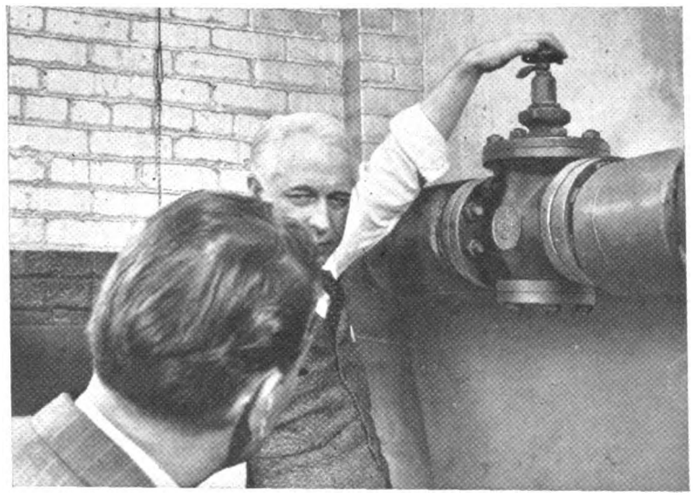


Figure 1.

Since the application of automatic pressure and temperature control to marine power plants around the turn of the century, many principles for automatically positioning a valve mechanism have been employed. Briefly, these include pressure reducing valves and temperature regulators of the following types:

Self-contained mercury sealed piston or diaphragm operated.
Self-contained weight loaded diaphragm or piston operated.
Self-contained weight loaded bellows operated.
Self-contained spring loaded diaphragm or piston operated.
Self-contained spring loaded bellows operated.
Self-contained external steam pilot diaphragm or piston operated.
Self-contained internal pilot diaphragm or piston operated.
Self-contained air loaded dome type diaphragm operated.
Auxiliary air, water or oil operated valves employing an external pilot for either pressure or temperature control.

The purpose of this paper is to illustrate the most popular types of regulators in use in the marine field and to explain where each type is best suited and why.

As basic classes of ships which are equipped with the regulators most commonly used in the marine field today, let us consider the American President Lines' PRESIDENT CLEVELAND and PRESIDENT WILSON, completed since the end of World War II, and the T-2 tankers, of which there are a great many in service with many different companies.

Basic Requirements

What are the basic requirements of a regulator to be accepted in marine service?

1. It must be easy to adjust to different pressure settings for various operating conditions. A handwheel as shown on the pressure reducing valve in Figure 1 is the simplest and most practical method of providing this ease of adjustment. It is also used on fuel oil, lube oil, main feed and similar pump governors.

2. It must be ruggedly constructed to withstand vibration and shock and of the best available materials to provide maximum life with minimum maintenance and replacement. The most erosion and wear resistant materials known to the engineering profession for use as valve trim are illustrated in Figure 2. This is a 600 lb. cast steel body with integral stellited seating surface and a stainless steel main valve heat treated to 500 Brinell hardness with ground stems and seat. The main valve spring is made of corrosion resistant alloy.

In Figure 3, the cylinder liner is also stainless steel heat treated to 500 Brinell with ground finish as is the controlling valve which operated in a stainless steel seat.

Figure 4 illustrates the complete assembly of a 600 lb. cast steel reducing valve which incorporates all of the latest materials as standard equipment. There are many reducing valves which look like this one on paper but which do not incorporate these features so essential to successful operation in marine service. Figure 5 shows one of these self-contained, internal pilot, piston operated steel body pressure reducing valves in auxiliary steam service reducing from 600 to 150 psi gage on the ss PRESIDENT CLEVELAND.

Figure 6 shows an external photograph of our 1500 lb. self-contained pressure reducing valve. It has been tested in actual service for more than three years and is now installed on the latest Ore Steamship boats built by Bethlehem-Sparrows Point Shipyard and will be used on the new high pressure tankers building at Sun Ship and Newport News. It incorporates the latest materials known to be satisfactory for temperatures up to 1000° F. The main valve spring is out of the steam flow in a cooling chamber where the temperatures are always 350-400° cooler than the steam itself based on actual measurements in service tests tak-

*President, Leslie Co., Lyndhurst, N.J. Presented before The Society of Port Engineers, San Francisco, November 3, 1948; and The Society of Marine Port Engineers New York, N.Y., Inc., December 15, 1948

Figure 2.

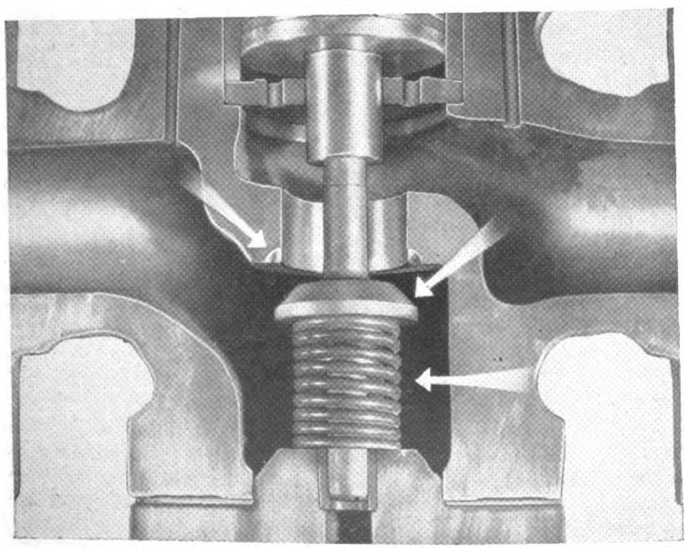
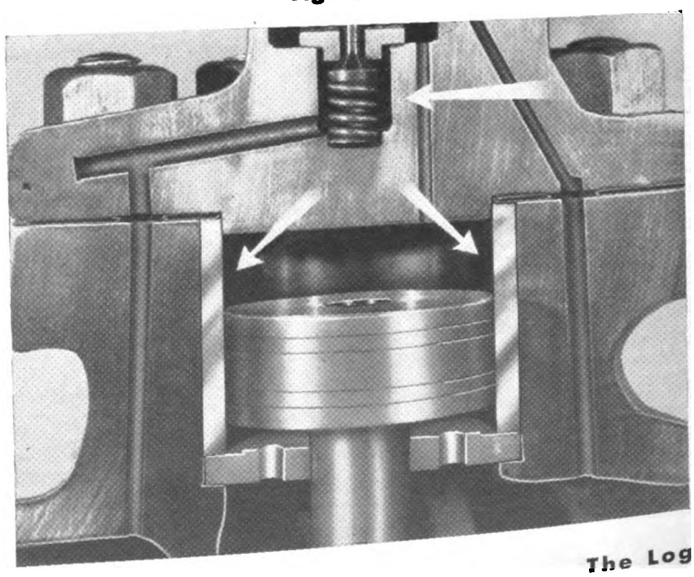


Figure 3.



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en after continuous operation for several weeks.

3. A third important requirement for regulators for marine service is that they must have maximum interchangeability of internal parts for flexibility and simplicity of maintenance and to minimize the number of spare parts which must be carried to maintain them while at sea or in foreign ports.

Value of Interchangeability

Figure 7 shows the similarity in construction of a self-contained internal pilot, piston operated pump governor, pressure reducing valve, and temperature regulator, all of which use the same main body with different superstructures. Note all of the internal parts which are interchangeable in all of these regulators. The advantages of this feature of interchangeability are obvious. Spare parts can be used in many different regulators and in an emergency one regulator can be robbed to maintain another with no machining or fitting necessary.

Figure 8 shows a sectional view of a "Duo-Matic" regulator which gives pressure and temperature regulation with a single valve.

The bulb of the thermostatic element is located as close to the outlet of the heater as possible. Vapor pressure from the bulb acts on a metallic diaphragm. The movement of this diaphragm is transmitted to the steam diaphragm by a rod and lever. The maximum steam pressure desired in the heater is set by means of the pressure adjusting spring as in a conventional pressure reducing valve. No matter how low the temperature drops, the pressure will never exceed this predetermined maximum. The temperature is adjusted by means of an adjusting nut under the spring of the vapor pressure diaphragm. It is set after the pressure limit adjustment has been made. As the load on the heater varies, the steam pressure will follow in direct proportion to the temperature change at the bulb. This regulator is used on fuel oil heaters and on the Butterworth system heaters on tankers.

Figure 9 shows an installation of one of the "Duo-Matic" temperature regulators on a fuel oil heater.

Figure 10 shows an installation of a pump governor for a turbine driven feed pump. The design features of this type construction are common to each of these three self-contained regulators. It is single-seated and tight closing, has no stuffing box or packing gland on any moving parts, uses heavy monel metal flat diaphragms with no bellows seal or rubber diaphragms. A similar governor is also used on reciprocating steam pumps for stand-by feed service, transfer service, etc.

Air Operated Controls

Air operated pressure controllers are being used in many shipboard services where reliable, accurate stand-by control is important with dead-end shut-off during stand-by periods.

One example is the use of air operated control pilots to maintain 7 psi on a feed-

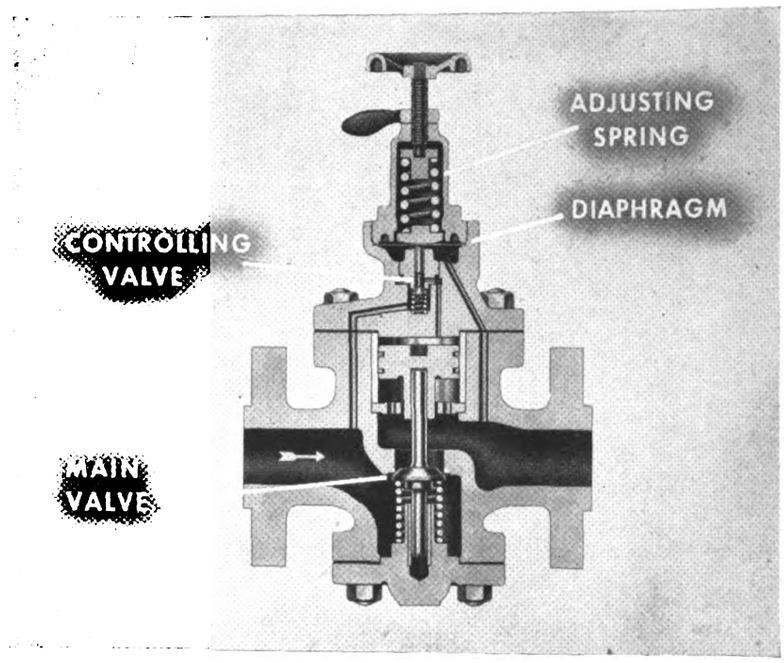


Figure 4.

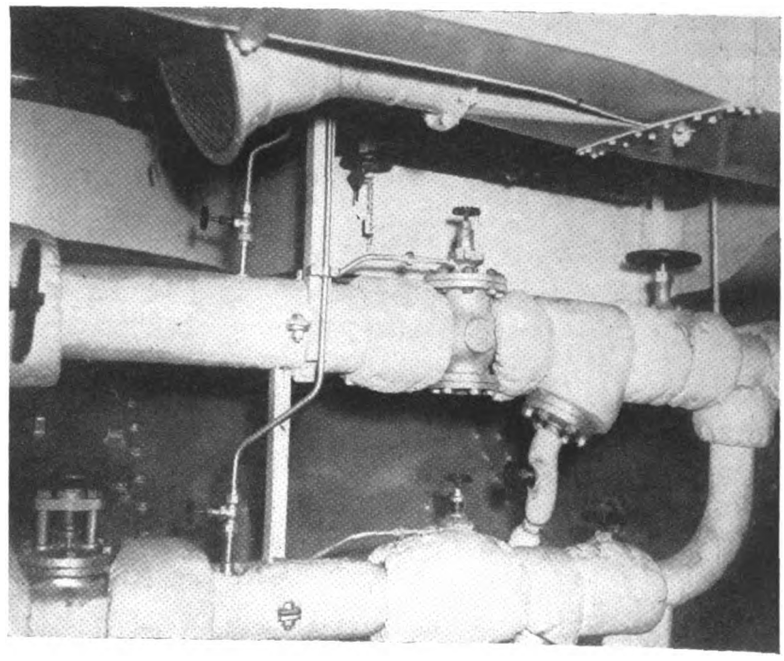


Figure 5.

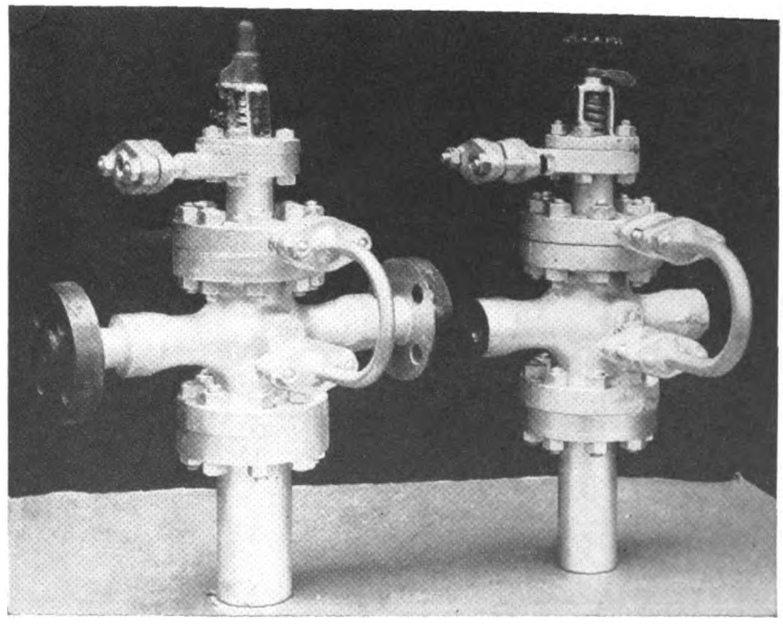


Figure 6.

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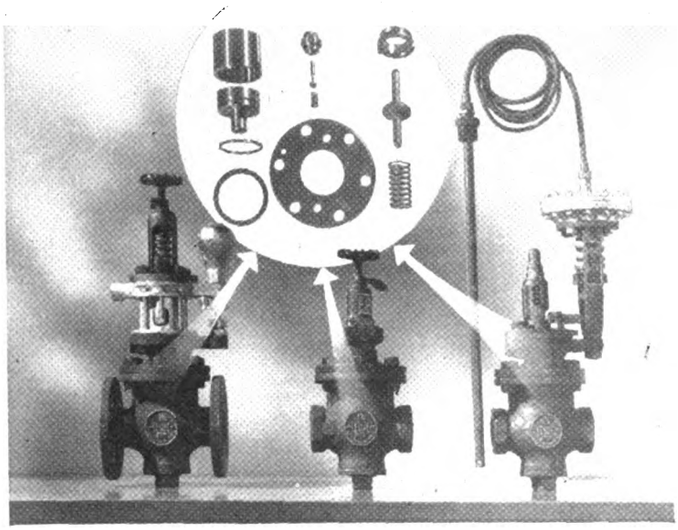


Figure 7.

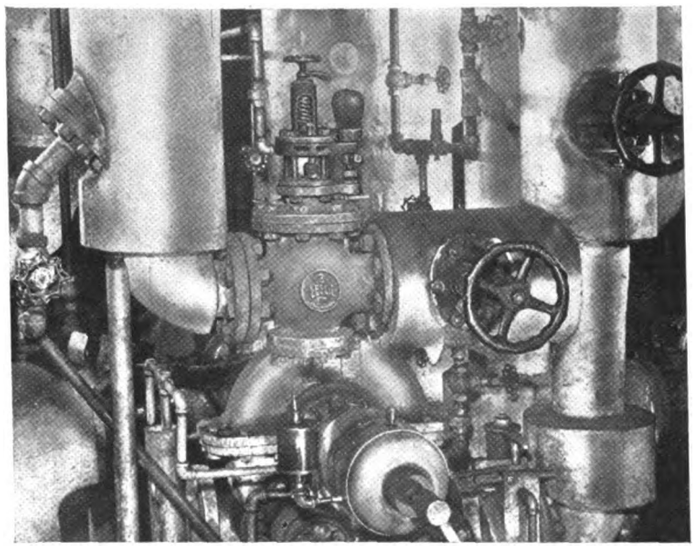


Figure 10.

water heater which is supplied with a varying amount of exhaust steam. If the pressure drops below 7 psi, one pilot opens a diaphragm regulating valve to supply high pressure make-up steam to maintain this pressure. If the pressure goes above 7 psi, the make-up valve closes and the other pilot opens a diaphragm regulating valve to relieve this pressure to a condenser.

In a direct acting pilot such as shown in Figure 11, an increase in controlled pressure moves the diaphragm downward which opens the pilot valve admitting auxiliary pressure to the diaphragm of the regulating valve. A decrease in controlled pressure permits the adjusting spring to move the diaphragm upward. This causes the pilot valve to close, after which the nozzle disc moves away from its nozzle, thereby bleeding the auxiliary pressure from the diaphragm of the regulating valve.

Since one or the other of these is always closed, there is no continuous bleed or loss of auxiliary pressure in this pilot. When the set controlled pressure is reached after a load change, both the supply pilot and bleed nozzle are closed so a fixed pressure is thus trapped on the diaphragm of the regulating valve holding it in a given position until another load change occurs. This pilot is also furnished reverse acting where an increase in controlled pressure causes a decrease in pressure on the diaphragm of the regulating valve.

Figure 12 shows a cross-section of a single-seated, fully balanced diaphragm regulating valve. Auxiliary pressure from the Control Pilot acts on the diaphragm to position the main valve in relation to the load. The spring under this diaphragm is adjusted at the factory so that the valve will begin to open at about 5 psi auxiliary

Figure 8.

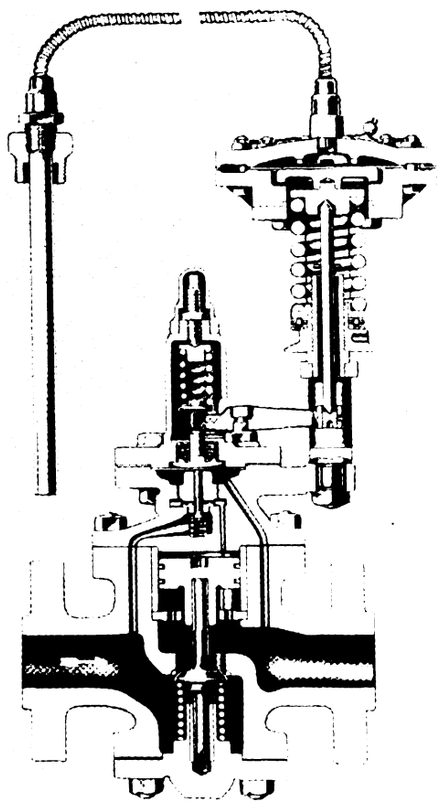
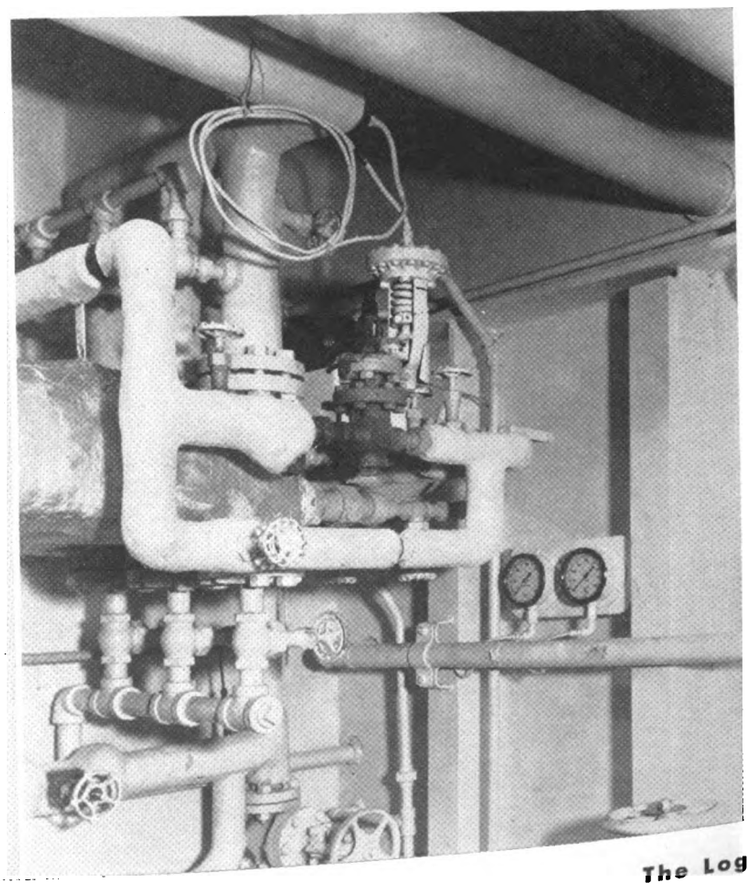


Figure 9.



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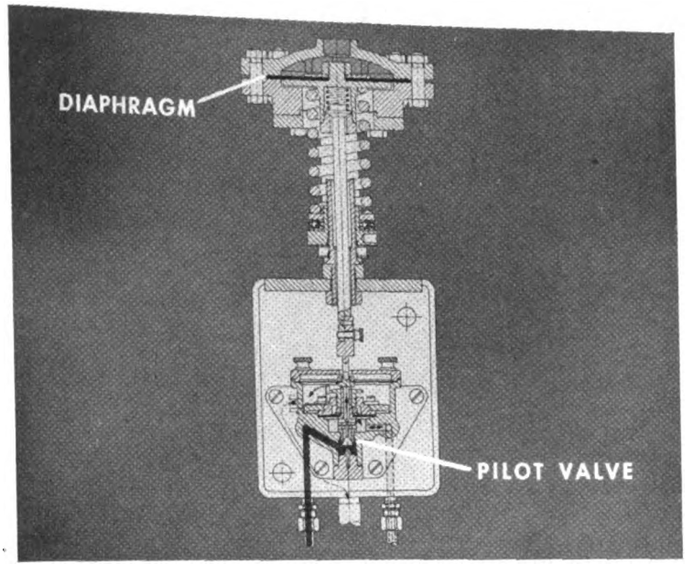


Figure 11.

pressure and be fully open between 15 and 20 psi auxiliary pressure. It should not be necessary to readjust this spring in service.

As the pressure on the diaphragm increases, moving the stem downward, a small equalizing valve opens admitting full inlet pressure to the top of the piston. In this valve, the piston is the same area as the main valve so the main valve then becomes fully balanced as to pressure and the diaphragm must now only compress the main valve spring to open the main valve. So long as this valve is open, it is fully balanced and very responsive to small changes in auxiliary pressure. When it closes, the main valve closes first with pressure under the seat. Then the equalizing valve closes. Both of these are single-seated so it is a tight closing valve permitting no leakage or waste of steam during stand-by or shut-off conditions.

Another typical installation of air operated controllers is in back pressure service on auxiliary exhaust lines. Here a 4" to 8" single-seated tight closing valve actuated by an air control pilot accurately throttles the steam from the auxiliary exhaust to maintain the desired pressure smoothly and dependably at all times.

Air operated controllers are particularly suited to bleeder steam control since they will maintain the pressure accurately whether a small or large volume is available.

In extreme reductions with wide load variations such as gland seal service, an air operated controller will maintain 2 psi gland seal pressure accurately when reducing from 150 psi regardless of flow required.

Therefore, air operated controllers are generally recommended for stand-by service, in services requiring unusually close regulation and for dependable trouble-free back pressure control.

An installation of an air operated differential control pilot is used to maintain sealing water pressure at a constant 10 psi differential above the casing pressure in the mud pumps on the dredges CHICAGO and CARIBBEAN. The mud pump pressures vary from 10 to 200 psi so the sealing water pressure will vary between 20 and 210 psi.

An example of the use of an air operated temperature controller is on recirculation to the hotwell. The thermostat is located in the condensate line from the air ejector condensers. When the temperature reaches 135°, this thermostat supplies air to open the diaphragm regulating valve in the recirculating line to assure a constant supply of cool condensate to the air ejector condenser so as to maintain sufficient vacuum in the main condensers. A fast acting open or shut control is preferable for this service and this is provided by this air operated thermostat.

New Design Temperature Regulator

Figure 13 shows a new self-contained temperature regulator which is now available for this service and it also provides fast opening and closing through the use of a lever type pilot. This is a major improvement over conventional self-operated temperature regulators which are of the modulating or gradual opening type and, therefore, not as suitable for this service.

This regulator is also furnished for heating service for storage type water heaters and has the advantage over many self-operated temperature regulators of being single-seated, tight closing in sizes from ½" to 4". It is possible to replace the thermostatic element of this and the "Duo-matic" regulator in service without removing the regulator from the steam line. This is a most important feature.

Having served the marine field successfully for 48 years, Leslie Co. is appreciative of this opportunity to discuss this subject with the Port Engineers and assures you of the finest in materials and service both now and in the future. Thank you for your interest and cooperation.

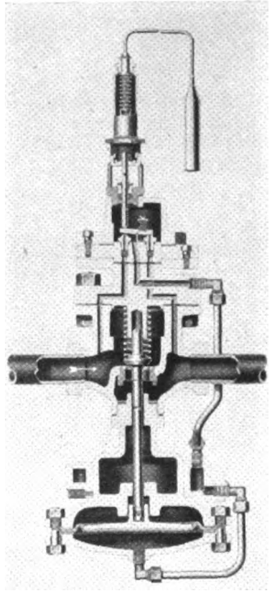


Figure 13.

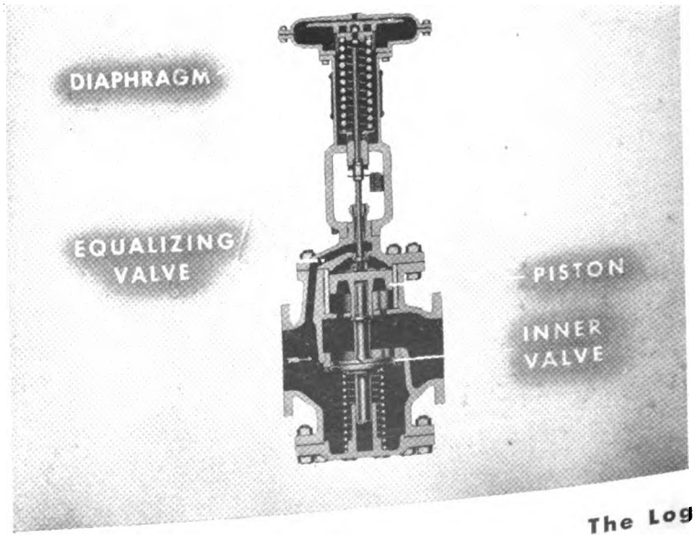


Figure 12.

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New Method of Bulkhead Support

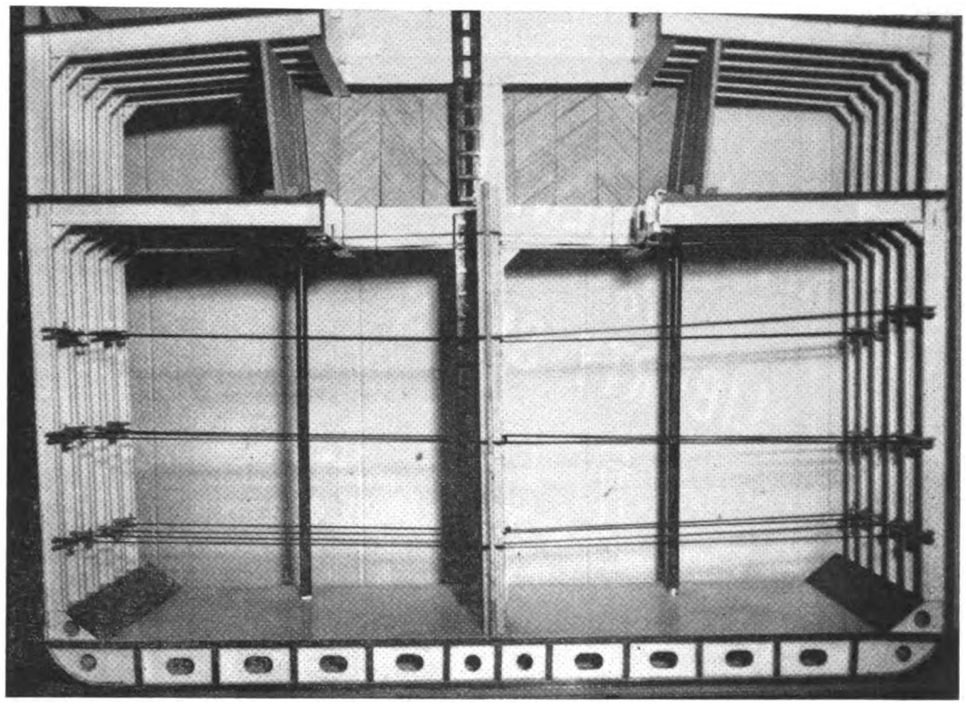
When the Liberty ship CHARLES CROCKER departed from Portland, Oregon, on August 31, laden with full cargo of wheat in bulk destined for the Orient, the familiar wood shores supporting the center line bulkhead were missing. Nevertheless, the ship sailed with the approval of the New York and San Francisco Boards of Marine Underwriters.

A new method of bulkhead support, utilizing the principle of tensile strain, instead of compression, had been used in the holds. The method consists of the use of two inch by fifty thousands extra heavy duty steel strapping for support in lieu of six by eight inch timber shores. With the use of specially designed adjustable winch tighteners and sealer devices the straps were drawn to desired tension and sealed at a rate of one hour and five minutes per unit.

Interest in the operation was widespread and viewed by steamship operators, labor leaders, supercargoes, marine surveyors, stevedoring officials and others. An observation made by some among them is that with the same number working in the gangs the supports were applied with greater ease and less effort and with saving of ship time.

Arguments advanced for the use of the steel straps are:

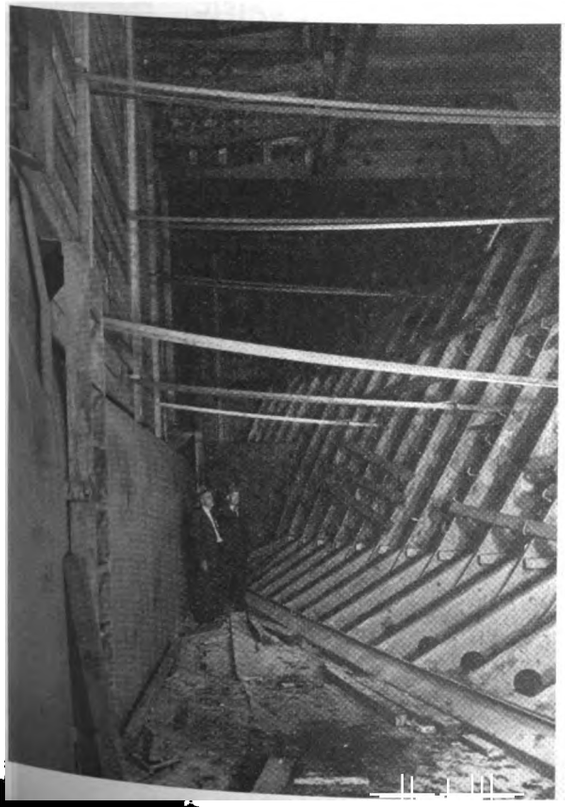
1. Savings in material. The cost of steel strap per foot is comparatively low as compared to timber shores.
2. In cases where the supporting material is salvaged and stored for another load ship space taken up for storing salvaged material is minimized.
3. The steel straps have a breaking strength of 30,000 pounds which is claimed to be double the compression strength of 6″ x 8″ shores.
4. Weight of straps are 1/3 pound per foot; weight of shores approximate 12 pounds to the foot; and straps take up a negligible amount of space; to result in extra cargo capacity of 12 tons for grain tonnage on a Liberty.
5. Minimizing weight of the supporting material eases the human effort by eliminating the lifting, tugging and hauling and other operations incident to cutting, and fitting and wedging of heavy timbers.



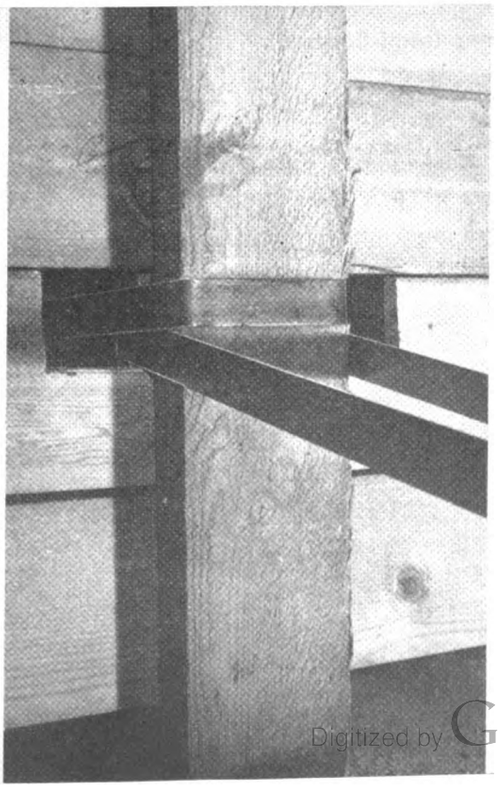
MODEL showing general design of hold and center line bulkhead and sustaining steel strapping and appurtenances.

The design, including spacing and positioning of strapping, the adjustable winch tighteners and sealer devices is that of Manly S. Harris. Under his supervision more than 1600 locomotives, several diesel trains, and other difficult-to-secure units were lashed to decks and in holds during the war to bring to him an enviable record of but few, if any, shifting of heavy units fastened down under his supervision.

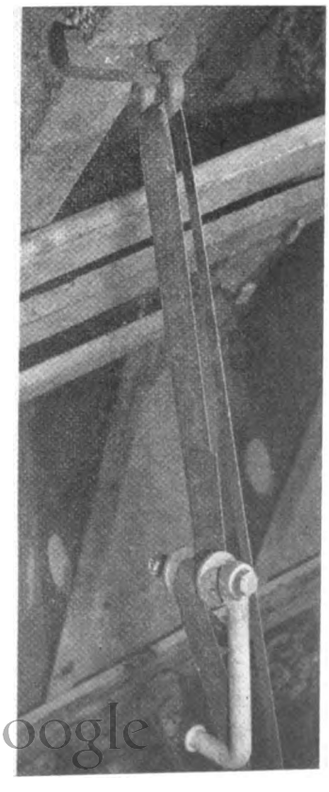
A ship of the Atlantic-Pacific fleet, operation of the CHARLES CROCKER is under control of the Army Transport Service, stevedoring for the vessel's loading in August was handled by Portland Stevedoring Company, Dwight Morris, manager.



VIEW of No. 5 lower hold, ss CHARLES CROCKER, showing band spacing in that area.



DETAIL showing wrapping of steel bands around the center line bulkhead uprights and the sustaining strains in opposite directions athwartship produced by the bands.



This detail shows the adjustable winch tightener and sealer unit as well as the frame clamp design.

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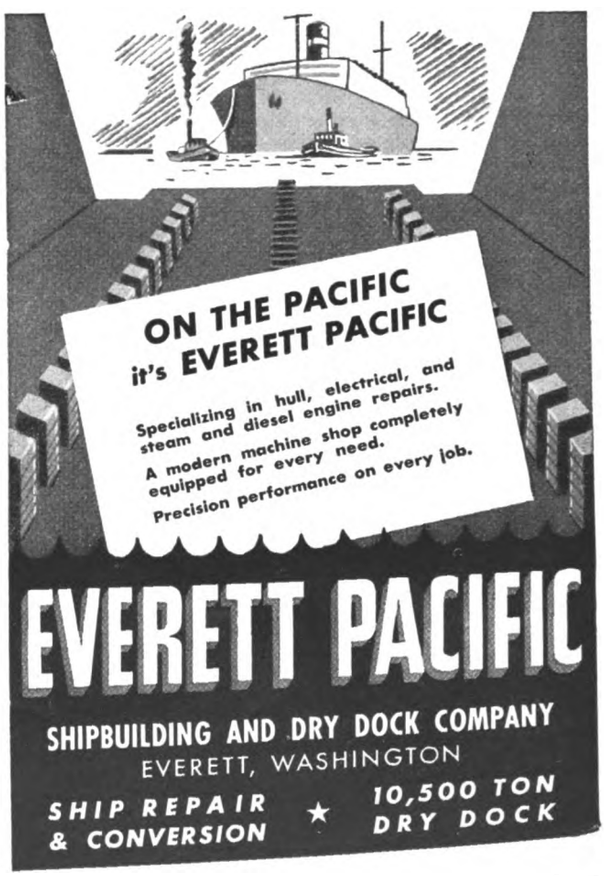
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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

SF Engineers Learn About Combustion Engineering Boilers

R. E. Streiff, Pacific Tankers, Inc., has been nominated unanimously for the office of president of The Society of Port Engineers, San Francisco, for 1949, to succeed Phil Thearle, United States Army Transport Corps.

M. C. Wright, Deconhil Shipping Company, is the sole candidate for vice president and George Harlan of the Army Transport Corps was named for secretary-treasurer to succeed James A. Reimers.

Combustion Engineering Company pictures were shown at the December meeting of the San Francisco engineers by Robert L. Lasher, service engineer for The Robert L. Johnson Corporation, Combustion representatives. These were two technicolor sound films, one titled "Building Boilers for Ships" and the second "Steam Progress."

The films showed operations in the Chattanooga, Tennessee, plant of Combustion which built more than 2,000 boilers between 1940 and 1946 for the war-built ships of the American Navy and Merchant Marine. They also related the history of Combustion Engineering from its first Heine boiler built in 1882 up to today's operations which can produce boilers capable of producing one million pounds of steam per hour at pressures of 1,800 pounds per square inch pressure and temperatures to 1,050 degrees Fahrenheit. It was interesting to note that one of these large boilers, which is twelve stories tall, burns 45 tons of coal per hour after the coal has been ground to a consistency comparing with face powder.

Another picture shown at the San Francisco meeting presented by the Electro Chemical Engineering Corporation Division of the Dearborn Chemical Company showed the results of a story of boiler foaming and chronicled the behavior of steam and water in a locomotive boiler carrying 236 pounds gage pressure. The pictures were taken through sight glasses in the boiler dome.

Marshall T. J. Garlinger, assistant superintending engineer of the United States Army Transport Corps at Fort Mason, San Francisco, has been elected vice president of the National Association of Practical Refrigeration Engineers. Mr. Garlinger was a founding member of The Society of Port Engineers, San Francisco and has been chairman of that body's program and educational committee.

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Columbia River Port Engineers Discuss Marine Paint & Rope

Marine paint and rope were discussed before The Society of Port Engineers, Columbia River Area, at Portland in November by Q. A. Herwig, Marine Service, Inc., Seattle, distributors for the International Paint Company and the American Manufacturing Company, whose film "Forty Centuries of Rope" was presented. Mr. Herwig reviewed the development, application processes and qualities of cold and hot bottom paints, contrasting them with qualities and experiences of conventional marine paints.

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Puget Sound Port Engineers Elect for 1949

M. W. Felton, port engineer, Alaska Steamship Company, has been elected president of the Society of Port Engineers of Puget Sound. He succeeds H. V. Moore of Matson Line. Other officers elected for 1949 are: R. C. Storrs, port engineer, American Mail Line, vice president; and E. D. Tucker, U. S. Maritime Commission, secretary treasurer.

Elected to the board of governors are J. D. Gilmour, Alexander Gow, Inc.; L. Simonsen, Standard Oil Company of California; F. H. Goward, American Mail Line; and J. D. Wilson, American Bureau of Shipping. Holdover members on the board are John W. Elkins, American Bureau of Shipping; and H. E. Lovejoy, Puget Sound Freight Lines.

Captain W. D. Hill, USCG (Ret.); recently retired as marine inspection officer was elected to honorary membership, to become the first one to be so honored.

The film "Power By Which We Live" produced for the purpose of better understanding of electric power and the skills and experience that make it possible, was shown before the Society of Port Engineers of Puget Sound at its November meeting.

Assisted by Edward Black, supervising engineer, marine division; and Emmett Johnson, engineer for the Seattle office; H. M. Perry, turbine specialist, General Electric Company, Portland, Oregon, exhibited the film. As a preamble to the showing Perry traced the history of the steam turbine from the early designs introduced by Parsons in England, DeLaval in Sweden, and Curtis in this country in 1895.

He explained: "The Parsons, now known as the reaction turbine because of the reactive kick from steam in the rotating element which causes it to rotate was the first type developed in this country. The Curtis turbine has evolved into the impulse turbine so-called for the fact that the rotating member is pushed around by the force of steam impinging on the buckets or blades. It was in 1897 that the first basic patent was issued to Curtis calling for pressure staging, using the impulse construction with one or more rows of moving buckets."

Stating that today in the United States more than 70 per cent of all the power used comes from steam turbines, getting their energy largely from coal as a fuel Perry discussed experiments with horizontal shaft type and developments with a vertical shaft arrangement and reviewed progress through to 1918. Then he said:

"In the next decade larger-and-larger capacity units were produced while pressures went up in a single jump to 600 and

(Continued on Page 50)

THE SOCIETY OF PORT ENGINEERS, San Francisco . . . Left to right: R. E. STREIFF, Pacific Tankers, Inc., newly-elected president of the Society; ROBERT L. LASHER, Service Engineer, The Robert L. Johnson Company, San Francisco, representatives of Combustion Engineering Company, speaker of the evening at the December meeting; H. (SCOTTY) ANDREWS and C. H. SANDELL, Steam Service Supervisors of Westinghouse Electric Corporation; DOUGLAS BARRETT, Service Engineer, Hagan Corporation.



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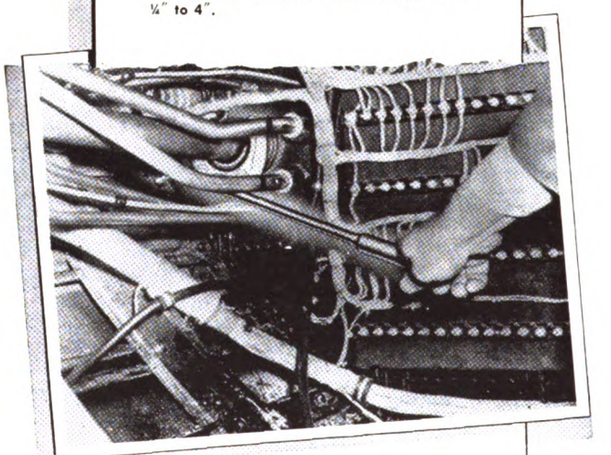
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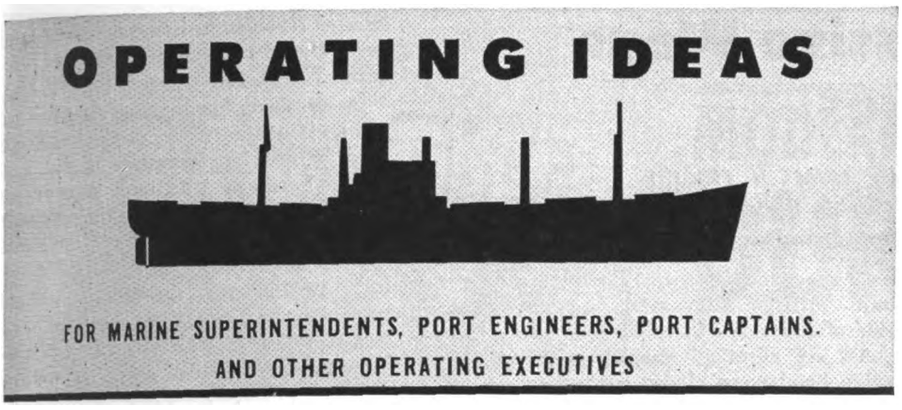
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ALLOWABLE DECK LOADS

By EDWARD V. LEWIS
Naval Architect
George G. Sharp

Questions often arise as to the maximum weight of cargo which can be carried on a particular part of a deck or tank top. Data on allowable uniform deck loadings for typical cargo ships are accordingly presented here in the form of a table which may be found useful for general guidance. The figures given apply only if the loads are uniformly distributed. Any weight concentrations will add greatly to the stresses and must therefore be carefully investigated for each particular case.

Structural Design

A discussion of some of the basic principles of structural design may be of interest as a background for an explanation of the tables. In many respects a motionless ship floating in calm water is not unlike a building, such as a warehouse, on shore. The weight of the ship and its contents is supported by the forces of buoyancy derived from the surrounding water. Although some of these forces act on the sloping sides, about 85% in a typical cargo ship acts directly on the bottom. The double bottom structure is then in effect the foundation of the ship. The weights of the machinery, outfit and cargo above the bottom are supported by the decks which in turn are supported by the pillars, main transverse bulkheads, web frames and the side shell and frames. The downward forces in these members are ultimately applied against the double bottom, the "foundation" of the ship.

The structures mentioned above, however, unlike the framework of a building, have other functions than simple support of weights. For instance, the "strength decks" (usually the two uppermost continuous decks) and the double bottom form the flanges of a huge box girder when the ship as a whole is subjected to longitudinal stresses caused by unequal fore and aft distribution of weights and buoyancy. The side shell and frames have the added function of resisting water pressure perpendicular to the plating. The double bottom must support not only the loads transmitted directly and indirectly from above, but must withstand water pressure from below and from within. Some decks serve as deep tank tops and therefore must resist liquid pressure from inside.

The analogy between a ship and a building breaks down further when it is considered that the ship does not remain in still water but proceeds to sea where it is called upon to continue to support all of the interior weights plus the structure itself and at the same time withstand all of the additional forces caused by the action of the sea. Green water breaks on the weather deck and against the shell, waves cause longitudinal bending and transverse racking stresses, pounding causes local stresses on the bottom. Hence, it can be appreciated that in considering allowable deck loads, careful consideration must be given to the other functions that the decks and tank tops must perform.

We shall consider now the generally accepted design principles which determine allowable deck loads.

Weather Decks

The weather deck is also a strength deck and is therefore designed to withstand the anticipated longitudinal stresses and in addition to resist a pressure from green seas of around 300 pounds per sq. ft. When a deck cargo is carried, it is assumed that the cargo will to a certain extent protect the deck from the sea and accordingly, except where bad weather is anticipated, a deck cargo load corresponding to about one half of the above figure, or 150 lbs. per sq. ft. is considered reasonable.

Decks Below the Weather Deck

Except for decks which form deep tank tops, these decks are normally designed to support a uniform load of cargo weighing 50 cu. ft. per ton extending to a height equal to the molded deck height, in addition to loads due to other functions of the deck. Hatch covers and beams are designed for a similar load.

In the case of refrigerated spaces in which hanging meat is to be carried, the decks from which meat is to be hung should be designed for this added load. Whether or not such additional strength is provided in the design in any particular case can be ascertained from the builder or classification society.

Deep Tank Tops

The scantlings of deep tank tops are based on a liquid pressure which depends on the height of the tank top with reference to the water line, height of tank overflow, etc. The deck load is not an addition to the design pressure, however, since the cargo weight will tend to equalize the liquid pressure from within. The actual assumed pressure in any particular case may be obtained from the classification society. The allowable external load will generally be somewhat less than the value of internal pressure used in design.

Inner Bottom

The allowable load for the inner bottom is not so easily determined as for decks because of the number of functions which it performs. Ordinarily, however, a load can be carried which is equal to a head of salt water to the level of the load water line. If it is desired to carry a greater load, as in the case of a deep ore cargo, the details of the bottom structure should be studied, for in some cases a greater load would be allowable. However, even though the bottom can withstand a greater water pressure from within where the floors and other vertical members are in tension, it may not be able to withstand the same pressure from without, since the vertical members will then be in compression and may buckle. Ships having solid floors without the normal number of stiffeners require particular attention in this regard.

Table

The accompanying table gives average values of allowable uniform deck loads for typical classes of cargo vessels. The figures may be used for general guidance, although there may be variations in individual ships. It must be emphasized that the figures are for evenly distributed cargo. Where there are concentrated loads special consideration must be given to the structure locally and shoring provided if necessary.

Table
Maximum Permissible Deck Loading for Typical Cargo Ships

Deck	Pounds per Square Foot Hold Number 1	2	3	4	5
C1-B					
Upper					
Second	150	150	150	150	150
Third	360	360	360	360	360
Inner Bottom	415	415	415	1030*	1030*
C2-S-B1	1350	1350	1350	1350	
Shelter					
Second	150	150	150	150	150
Third	405	405	405	405	405
Inner Bottom	450	640*	450	640*	1200*
C3-S-A2	1350	1350	1350	1350	1350
Shelter					
Second	150	150	150	150	150
Third	405	405	405	405	405
Inner Bottom	715	1550*	580	555	1550*
Victory	1550	1550	1550	1550	1550
Forecastle					
Main	150				
Second	405	150			
First Platform	560	540	150	150	150
Inner Bottom	...	540	540	540	405
C1-M-AV1	1650	1650	1650	1650*	620
Main					1650*
Second	150	150		..	..
Platform	450	450	150		
Inner Bottom	...	...	450	150	
	1290	1290	1290	450	
				1290*	
				..	

*Deep Tank Tops

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How to Stop Excessive Wear on I. P. Slide Valves

By JAMES H. FRICKIE
Marine Surveyor
San Francisco, California

Side wear of Liberty ship I. P. valves has been a constant source of worry to engineers and operators since this type of engine was first put in use. The writer had an opportunity to study this condition on the ss SIMON BENSON in March of this year while the vessel was in for repairs at the Moore Dry Dock Co., Oakland, California.

The valve was badly worn and in need of new wearing strips on both sides. After studying the possible causes for this excessive wear and periodical repair by replacing the side wearing strips or making other expensive alterations to try and relieve this condition, it was decided to close up the three elliptical stress relieving ports cast in each side of the fixed cast iron hood which encloses the slide valve. It was reasoned that these ports allowed the pulsating pressures in the I. P. valve chest to work against the moving I. P. valve and cause intermittent thrusts alternately against each side of the valve to cause this wear.

All six elliptical shaped ports in the valve hood were closed with sheet metal covers put on in the form of a soft patch and the cap screw heads of the patch bolts were drilled and wired together so none could work out.

The valve on this vessel was checked several times, the last time in October of this year. The vessel has run approximately 20,000 miles and the valve shows no signs of side wear. The side clearance at the time of repair last March was about .015 inch and the change of clearance is negligible.

It is hoped that this solution to the problem will be of use to others.

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Pacific Coast Engineering Builds New Harbor Tug

Completion in March is scheduled for a $175,000 steel tug being built by Pacific Coast Engineering Company, Alameda, for the California State Board of Harbor Commissioners, for work on San Francisco bay. A 475 h.p. Model DMG-8 Enterprise Diesel engine is to power the craft. Dimensions are 73′ 6″ in length, 18′ beam and 9′ 3″ draft.

All deck machinery is being furnished by the Markey Machinery Company, Seattle, through their California representative, George E. Swett & Company, Engineers, San Francisco. This consists of a bit windlass with two gypsy heads, an air motor driven towing winch, pilot house steering stand and a hydro-pneumatic steering engine. The tug will have pilot house control. Auxiliary power is supplied by a 22 h.p. United States Motors Co. diesel.

Two thirds of the hull from the bow aft will be sheathed with 8″ Douglas fir and 4″ iron bark. This will be done by Anderson & Cristofani, San Francisco boat builders, who are doing all the woodwork.

Ets-Hokin & Galvan, San Francisco marine electricians, have the contract for all the electrical work.

The harbor commissioners voted to name the tug the FRANK G. WHITE after the former chief engineer of the board who retired last year after 37 years of service.

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Portland Shipping Dinner A December Event

With more than 300 in attendance Portland, Oregon, shipping men utilized the Portland Shipping Club Annual Dinner on December 11 to observe end of the 95 day Pacific Coast marine tie-up.

Under the direction of club president E. E. Shields, Sudden and Christenson, members handling the event included entertainment committee chairman Ralph Boone, West Coast Terminals, and J. D. Weber, J. T. Steeb and Company; L. M. Thompson, Western Transportation Company; Arnie Fenger, Moore-McCormack Line; Dwight Morris, Portland Stevedoring Company.

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Seen and Heard Along North Pacific Fronts

James E. Murphy, formerly with Olson Boiler and Machine Works, Inc., and long time marine superintendent for Puget Sound Navigation Company has affiliated with H and L Machine Works, Inc., Kirkland, Washington.

A. W. Copp has acquired the Olson and Winge Machine Works property at Seattle and moved his operations to that location. Formerly operating as Northwest Ship Repair Company the company name has been changed to Northwest Marine Repair Company.

A. W. Paterson, president, Consolidated Services, Inc., Seattle, has announced the appointment of Walter Drinkard as manager of the company's McCray refrigerator department. A refrigeration engineer, Drinkard has been active in the retail refrigeration trade at Seattle.

E. J. Schneider, manager of Portland office of Submarine Signal Company has been transferred to Seattle to assume management duties there.

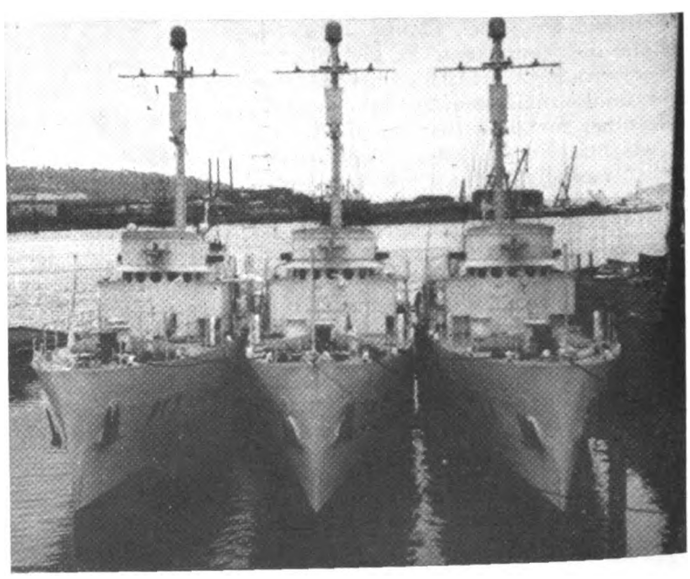
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Port of Oakland's Tonnage Equals 1947 Record

Tonnage handled at the terminals of the Port during the first eight months of 1948 is approximately the same as for that period of 1947—an increase in domestic tonnage compensating for a slight decrease in foreign cargo inbound and outbound, according to the September progress report submitted to President Claire V. Goodwin and the Oakland Board of Port Commissioners.

The amount of cargo shipped from the Port to the east coast and Gulf ports shows the largest increase—247,035 tons in 1948 compared to 210,681 in 1947. Coastwise shipping, inbound and outbound, continued to increase—tonnage handled during the first eight months of this year being more than double what was handled in 1946, the first post war year for shipping.

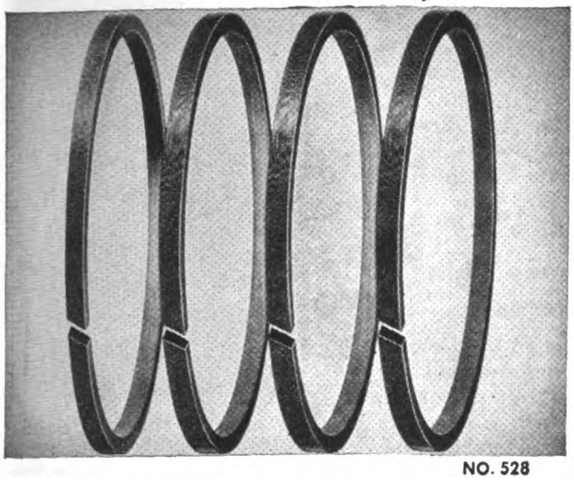
A major reason for the decrease in foreign inbound cargo is the almost 60 per cent increase in the price of copra per ton which was in effect during the earlier months of this year. Approximately 20 per cent of the foreign cargo received at Port terminals is copra.



DESTINATION, FRENCH INDOCHINA. PC ships overhauled and converted at Puget Sound Bridge and Dredging Company, Seattle, for French Government for use as customs patrol ships. Manned by French crews they will leave for French Indochina in the spring. Other work at the Puget Sound Bridge and Dredging Company yard includes work on the Army freighter FS-398 at cost of $45,000; rehabilitation of the Army tug LT-822 at a cost of $75,000 following sinking of the vessel; repairs to the lightships SWIFTSURE and COLUMBIA at total cost of $38,000. The company is low bidder on the conversion of LST-662 to freeze-cannery vessel for Pacific American Fisheries with a bid of $467,000.

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Floating Type



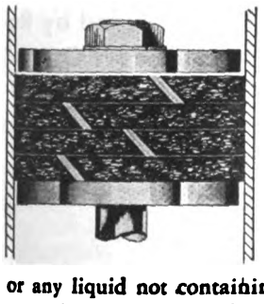
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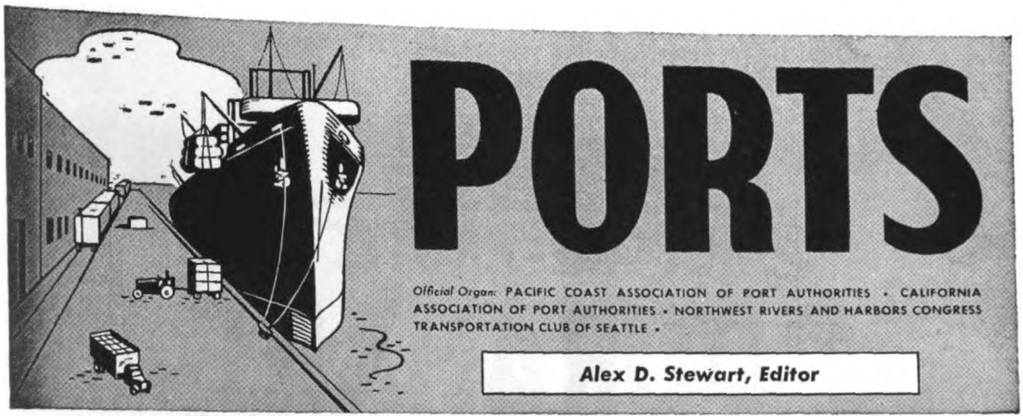
Technical information on NAVICOTE PLASTIC (S.M.) *is available upon request. Write Hart and Burns, Inc., Riverside, California.*

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A. E. Gunderson Named to Portland Dock Commission

Mayor Riley of Portland, Oregon, has announced the appointment of A. E. Gunderson to the Commission of Public Docks, succeeding L. R. Teeple whose term expired in December. Gunderson is co-owner of Gunderson Bros. Engineering Corporation, a steel fabrication concern which during the war built lifeboats, navy landing craft, and other light craft.

The office building of the dock commission was shattered in a gas explosion in December. A concrete vault was the only part of the structure remaining intact; walls, partitions, and furniture being blown in all directions almost to the point that no two adjacent pieces of the structures remained together. The explosion occurred when Walter Kratt, commission chief engineer, returned to the office in the evening, and turned on a light. Suffering second degree burns Kratt managed to crawl from the debris and in early December was reported to be recovering from his injuries after passing a critical ten day period.

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Norfolk Port Director Given Testimonial Dinner

E. O. Jewell, former general manager of the New Orleans port commission, was termed a "pillar of strength in every civic movement for the good of the city" at a testimonial dinner in his honor.

Mr. Jewell left the New Orleans port December 1 to become executive director of the Port of Norfolk. The dinner, given in honor of Mr. Jewell and the Port of New Orleans, was sponsored by twenty-four civic clubs, businesses and business organizations.

William G. Zetzmann of New Orleans presented Mr. Jewell with a silver service at the dinner and said, "We will long remember the efficient and energetic manner in which, for many years, you have administered the affairs of our port."

Joining the New Orleans port commission in 1940 as director of commerce, Mr. Jewell was made general manager eighteen months later. He is a former president of the American Association of Port Authorities.

Names mentioned prominently as possible successors to E. O. Jewell, former general manager of the Board of Port Commissioners in New Orleans, now manager of the port of Norfolk, Va., included Raoul J. Jourdan, New Orleans shipping executive; Alva P. Frith, who resigned as Lake Charles port director November 1, and Lewis I. Bourgeois, director of commerce for the city of New Orleans in Washington.

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Columbia Barge Lines Fight Drop in Rails' Oil Rates

Operators of barge lines on the Columbia River are taking execption to rail line proposals to reduce rates on petroleum products to points in Eastern Washington from Salt Lake City and Puget Sound. Rail lines seek a multiple car rate from Salt Lake City and up to 15 cents a hundredweight reduction from Puget Sound.

Movement of petroleum products via tank barge from Portland as a distribution center to tank farms along the Columbia as far inland as Lewiston, Idaho, and Pasco, Washington has accounted for the major portion of tonnage moved on the river East of Vancouver, Washington, for a number of years. From the tank farms distribution has been made by tank trucks to many interior points in Washington, Idaho, and Oregon. Recent developments have been an ever increasing movement of grain products down river thus providing the barge lines with a two-way haul.

Commenting on the situation a spokesman for the barge lines has remarked he believes the rail line application is inconsistent and continues: "Coming at a time when railroads generally are asking for substantial increases, which are needed by the barge lines as well, the requested reductions in petroleum rates are of very serious concern to the barge lines, and to wheat farmers and others. If the low rates sought by the railroads are granted the action will put the barge lines off the river."

The other barge lines are giving the rail lines a battle on another front. Dealing with the contractors working on McNary Dam the Tidewater-Shaver Barge Line is barging cement from the Permanente plant on Puget Sound down the Washington Coast and up the Columbia to McNary Dam some 300 miles inland. A movement counted in trainloads is contemplated. Distance by water, Seattle to Umatilla, Oregon, is 600 miles. Barges used are converted LSM's, cut down and rebuilt, all machinery removed, to carry 5,000 barrels (1,000 tons). Water ballast holds the barge down to draft for deep sea towing, and will be pumped out to allow a draft of 7½ feet for upper river navigation.



LOS ANGELES STEAMSHIP ASSOCIATION ELECTS AS NEW PRESIDENT, J. B. BANNING, JR., Assistant Freight Traffic Manager, Matson Navigation Co. W. B. BRYANT, District Manager, General Steamship Corp., Los Angeles, became Vice President of the Association and HARRY R. DOOR, Norton, Lilly & Co. was re-elected Secretary Treasurer.

New Commissioners Elected At the Port of Everett

Charles Swanson, retired fire chief at Everett, Washington, and Jack Thompson, engaged in the fishing industry, have been elected as port commissioners at that port. They succeed Hans Solie and the veteran F. G. Tegtmeier. Tegtmeier was defeated for reelection following service with the port since the district was first organized 30 years ago.

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Terry Succeeded by Rowe As Seattle Port Commissioner

Commodore Gordon Rowe, USN (Ret.) has succeeded A. B. Terry as port commissioner at Seattle as result of the November elections. In the Navy since 1916, Commodore Rowe graduated from Pensacola in 1925 to become active in naval aviation. During War World II his major assignments included duty in connection with construction of naval bases in the South Pacific.

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Portland, Oregon, Considers Leasing Port Properties

A long established policy of the Commission of Public Docks, Portland, Oregon, of operating the public owned waterside facilities rather than leasing them is being studied by the commission with the view of practicality of reversing the policy.

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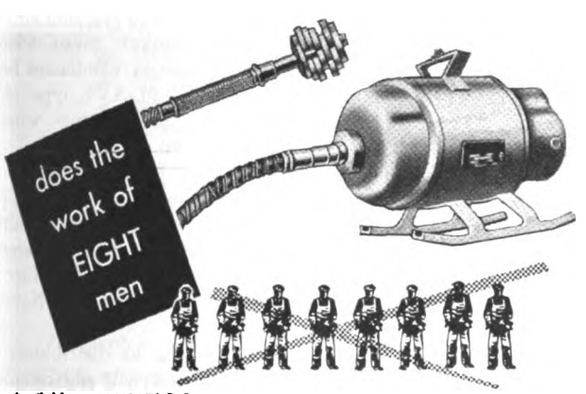
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EQUIPMENTALK

Marine Representatives Confer With Dampney in NY

Marine representatives of The Dampney Company of America, Boston, manufacturers of APEXIOR and THUR-MA-LOX protective coatings, joined John W. Laverack, president, William Richards, vice-president, marine division, and a large group of industrial representatives at the Hotel Commodore, New York, November 29 through December 1 for the company's annual sales meeting under the direction of J. Dwight Bird, vice-president and general sales manager.

Present for the sessions, held in conjunction with the 18th National Power Show and the annual meeting of the American Society of Mechanical Engineers were:

S. J. Webster, president, and O. C. Webster, vice-president, Southwestern Marine & Supply Company, Houston and Galveston; James A. Viavant, president, Marine Welding, Scaling & Sales Company, Inc., New Orleans; W. K. Davidson, president, W. K. Davidson Company, Montreal; George C. Anderson, Combustion Equipment & Insulating Company, Cleveland; James H. Byington, president, Savannah Ship Chandlery & Supply Company, Savannah; Walter B. Hill, manager, marine division, C. C. Moore & Company, Engineers, San Francisco; and Frank Ritchie, sales manager, Paxton Company, Norfolk.

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Wickwire Spencer Celebrates 50th Anniversary

Celebrating the 50th anniversary—1898-1948—of wire rope making at its Palmer, Massachusetts, plant, the Wickwire Spencer Steel Division of The Colorado Fuel and Iron Corporation has issued a handsomely-illustrated book of nearly 200 pages on wire rope.

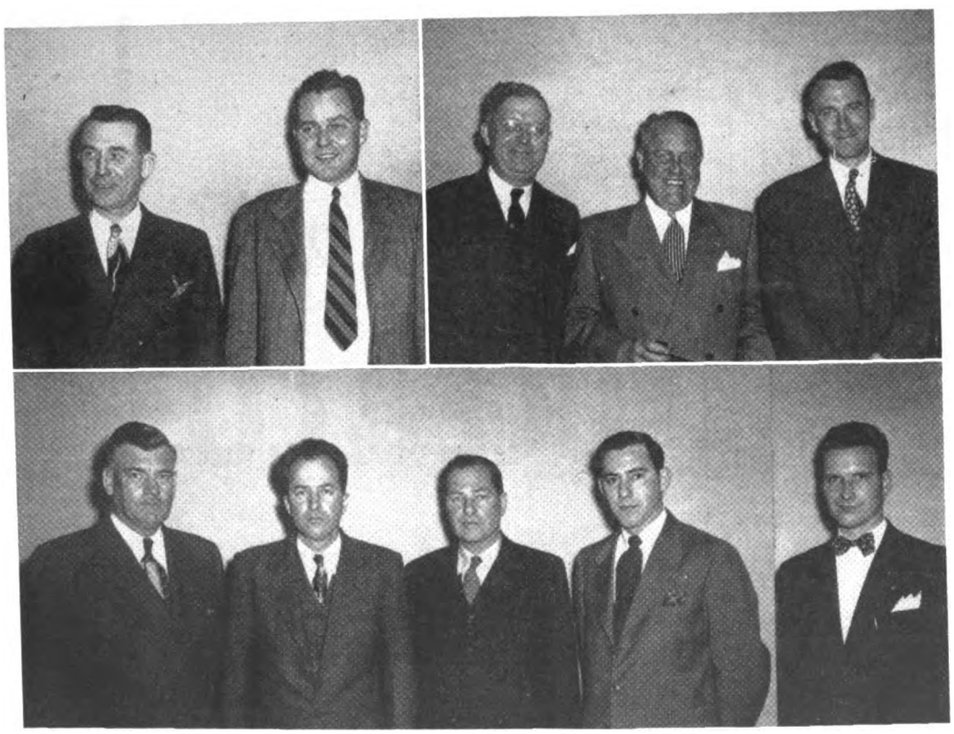
A chapter is devoted to each industry using wire rope, with a description of various types ropes used aboard ship such as operating ropes on cargo falls and topping lifts and rigging ropes, guy ropes, mooring lines and hawsers.

Wickwire Spencer's head office is at 500 Fifth Avenue, New York, and it has sales offices in 12 other cities.



NEWLY-APPOINTED Manager of Nordberg Mfg. Co.'s Installation and Service Department . . . **MATT STROMBERG**, succeeding Jean Santschi retired after 34 years with company.

MARINE REPRESENTATIVES attending the annual sales meeting of The Dampney Company of America at the Commodore Hotel, New York, November 29th-December 1st, were these men from the Atlantic, Gulf and Pacific Coasts and Canada. Left to right, top row, they are: J. DWIGHT BIRD, Executive Vice President and General Manager; JOHN W. LAVERACK, President, The Dampney Company of America, Inc., Hyde Park, Boston, Mass.; JAMES BYINGTON, Savannah Ship Chandlery & Supply Co., Savannah, Ga.; WILLIAM RICHARDS, Vice President in Charge of the Marine Division, The Dampney Co. of America, New York; WALTER B. HILL, Manager, Marine Division, C. C. Moore & Co., Engineers, San Francisco.



Bottom row, left to right: S. J. WEBSTER, Southwestern Marine & Supply Co., Inc., Houston and Galveston, Texas; JAMES VIAVANT, Marine Welding, Scaling & Sales Co. Inc., New Orleans, La.; W. K. DAVIDSON, W. K. Davidson & Co., Montreal, Canada; GEORGE C. ANDERSON, Combustion Equipment & Insulating Co., Cleveland, Ohio; FRANK RITCHIE, Paxton Co., Norfolk, Va.

Western Machinery, Portland, Announces Consolidation

Kenneth Hall, president, Western Machinery Corporation, Portland, Oregon, has announced the sale of part of the corporation's real property and machine tools and complete renovation and rearrangement of offices on adjacent company property at 1035 S. E. Ninth Avenue.

The change has been made to concentrate on production of the corporation's own line of equipment, including replacement parts for Liberty ship anchor windlasses, T-2 tanker cargo winches and anchor windlasses, windlasses for Victory ships and C1-M-AV1 type ships, and manufacture of topping winches and deck equipment.

In addition to maintaining a stock of replacement parts all patterns, drawings, jigs and fixtures for deck machinery produced under the present name and as Hesse-Ersted Iron Works for the U.S. Maritime Commission and Navy, are retained.

The firm acts as distributors for Falk Corporation and will add complementary lines from time to time. Wally L. Ardies is vice president of the corporation; Jack Neilsen is sales manager. Tom Baird at 112 Market Street is San Francisco representative.

⚓ ⚓ ⚓

Pacific Marine Refrigeration Co., Alex Johnston, owner, has moved from Oakland to 179-191 Steuart Street, San Francisco, telephone YUkon 2-7054.

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T2 Tanker Thrustshafts	$1,000 ea.
T2 Coupling Bolts, oversize	20 ea.
Steel Accommodation Ladders	380 ea.
Galley Ranges, Oil Burners	380 ea.
Cargo Booms, 5-ton, 47'	345 ea.
Cargo Booms, 15-ton, 55'	385 ea.
Steamboat Jacks, 15-ton	20 ea.
Buda Push-Pull Jacks, 15-ton	15 ea.
Motor Controllers, DC, 2 HP	50 ea.
Boom Pedestals, 50-ton	220 ea.
Boom Pedestals, 30-ton	135 ea.
Anchor Chain, 2⅛" (1 shot)	285 ea.
Hawser Reels, 140 Fath	140 ea.
Hawser Reels, 90 Fath	95 ea.
Combustion Controls, Bailey	150 ea.
Motor Generator Set, 5 KVA	425 ea.
Doors, Watertight, R.H.	40 ea.
Wrenches, Propeller Nut	45 ea.
Unionmelt (flux)	2½c lb.

NEW:

Gauges & Thermometers	various
Welding rod & tips	various

USED:

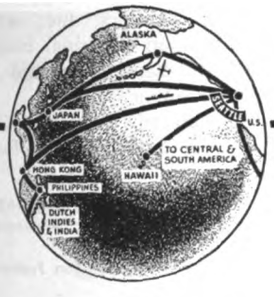
Chain Hoists, 25-ton	$ 265 ea.
Lifeboats, Motor-dr.	1,000 ea.
Gantry Crane, 10-ton, 50'	8,700
Welding Mach., Westinghouse	180 ea.
Generators, Gas-driven	250 ea.
Balltop Rollers	4.50 ea.
Crane, Portable	400 ea.

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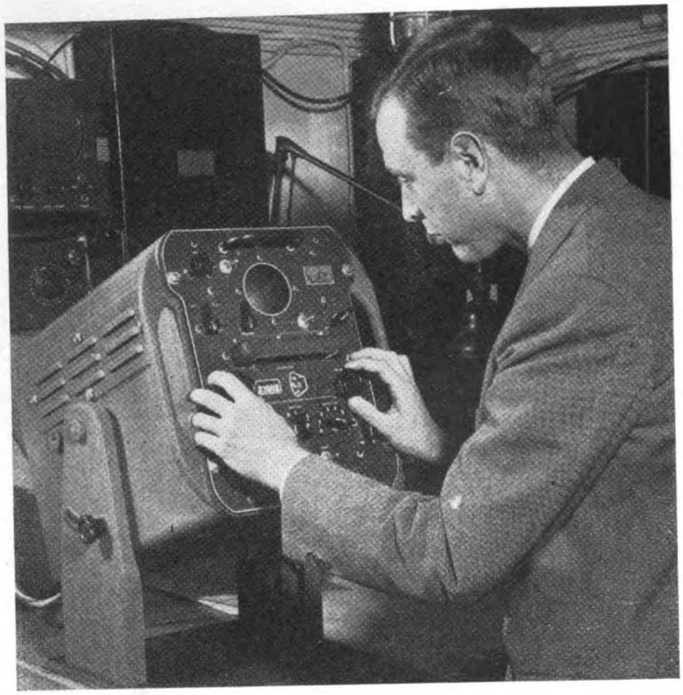
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NEW Sperry Mark 2 Loran can be table-mounted as demonstrated by Capt. W. R. Griswold who tested the device at sea aboard Sperry's floating laboratory M/V WANDERER.

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Sperry Markets New Loran Equipment

Sperry Gyroscope Co., Great Neck, N.Y., recently put a new loran receiver-indicator using miniature tubes into quantity production. Of compact design, the long range, electronic navigational equipment may be shelf, table or deck-mounted.

The direct-reading feature, developed and first introduced by Sperry in the Mark 1 loran, has been retained, however, the re-design is rather comprehensive and results in more ease and speed of operation.

Sperry's manager of marine sales, O. B. Whitaker, states that the Mark 2 loran incorporates six important improvements: its small size and use of separate power unit suits it to vessels with limited space; trunnion mounts permit tilting of the receiver-indicator to suit the operator; large numbers make the time-difference meter easy to read; motor driven phase-shifting circuit plus continuous course and fine delays simplifies and speeds operation; an automatic frequency control keeps the pulses locked on the operating portions of the sweeps; "black light" illuminates panel without interfering with night vision.

Commercial deliveries are scheduled for early spring.

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New Marine Representatives Named in West by Marlo, Oxi

The Marlo Company, Inc., New York, announces appointment of Universal Specialties Company, Inc., 2411 East Anaheim Boulevard, Wilmington, California as western states representatives for its mechanical packings and plastic piston rings.

Universal Specialties will handle Marlo sales and service in southern California and has named the following representatives in other western cities: Seattle: Sheldon Dunning & Company, Smith Tower; Portland: D. M. Gibson Company, Swan Island and San Francisco: Alvin R. Campbell Company, 599 Front Street.

President and marine superintendent of Universal Specialties is Charles R. Jackson, formerly port engineer of the Hammond Shipping Company and a charter member of The Society of Port Engineers, Los Angeles.

Mr. Jackson is also Pacific Coast manager for the Oxi Corporation, Gary, Indiana, manufacturers of the Oxi Crystals and "KOR" (Keeps Oil Right), a dual-purpose fuel treatment. The Oxi line, too, is being handled by Sheldon Dunning, the Gibson Company and the Campbell Company in Seattle, Portland and San Francisco respectively.

Service engineer and vice president of Universal Specialties is Marvin (Mac) Segal, a marine sheet metal operator in southern California for thirteen years. Secretary is Bernard (Bud) Reisman, a galley range and burner specialist and manager of the affiliated Universal Galley Range Repair Service Company, distributors of "Ni-Resist" range tops.

In southern California Universal Specialties also represents the De Boom Paint Company, manufacturers of Flagship Brand Paints and the Briggs Bituminous Company, Philadelphia, manufacturers of Farbertite and Seamtite, the former a protective coating for metals and wood and the latter a protective coating for gas and oil tank interiors.

Mr. Dunning, in Seattle, also handles the plastic, marine and industrial coating products of the Amercoat Division of the American Pipe & Construction Company and the Chessman-Elliot Company high temperature coatings. He was with a firm of admiralty attorneys in Portland from 1933 to 1935, later was claim superintendent for the Ocean Accident and Guarantee Corporation at Seattle and, after his release from the United States Navy, in which he served as lieutenant, established his own company.

In Portland, Mr. Gibson has been in business since early last year handling marine hardware and heavy equipment. Previously he was port engineer for Pacific Tankers, Inc., was a Maritime Commission principal inspector and was with the Kaiser Company, Inc., as a trial trip engineer.

Associated with Mr. Gibson is Jack

(Continued on Page 50)

NEW PACIFIC COAST REPRESENTATIVES OF MARLO AND OXI—Left to right: top row, MARVIN (MAC) SEGAL, CHARLES I. JACKSON and BERNARD (BUD) REISMAN, Universal Specialties Co., Wilmington; D. M. GIBSON and JACK LAMBERT, D. M. Gibson Company, Portland.
Bottom row, BOB POTTER and BILL SCHWARTZ, Alvin R. Campbell Company, San Francisco, and SHELDON DUNNING, Seattle.



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Wilmington, Calif.
Phone: Long Beach 70-2354

AND AS DISTRICT REPRESENTATIVES:

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559 Front St.—SUtter 1-0633

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Swan Island—TUxedo 3793

Seattle, Wash. —Sheldon Dunning & Co.
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American's New Calendar Now Available

"Full and By" is the caption of the painting of two sailing vessels on the American Manufacturing Company's 1949 calendar now available to marine men who write for it on their company letterhead.

In the painting by marine artist Charles Robert Patterson, the American ship ST. DAVID is shown in the foreground. Of 1536 tons, she was built at Bath, Maine in 1877 and the original owner was Benjamin Flint of New York. She was later purchased by the California Shipping Company and sailed in the Pacific. The last eight years of her service were spent as a barge in the service of James Griffiths & Sons of Seattle. The ST. DAVID was lost by stranding near Yakutat Bay, Alaska, October 31, 1919.

The vessel in the background is the British ship KIRKCUDBRIGHTSHIRE, 1482 tons, built at Greenock, Scotland for T. Law & Co., Glasgow.

The calendar is available as long as the supply lasts by writing to the American Manufacturing Co., Noble & West Sts., Brooklyn 22, N.Y.

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Marlo, Oxi Representative

(Continued from Page 48)

Lambert, sales engineer. Mr. Lambert has been with the Northwest Marine Iron Works and Commercial Iron Works, both Portland firms.

The two lines are being handled at the Campbell Company in San Francisco by William H. Schwartz and Robert G. Potter, both well-known on the waterfront there.

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THE NEW GARLOCK RUBBER EXPANSION JOINT for pressure, vacuum, or pressure and vacuum made by The Garlock Packing Company, Palmyra, New York. Just off the press and upon request available from the company is a well-illustrated folder showing the construction, uses, and advantages of these new rubber expansion joints.

List of New Pacific Coast Charts Now Available

From his new location at Fishermen's Dock, Seattle, L. E. Shrock, the compass adjuster, is sending out chart lists supplying data on new charts issued during the past year for the Pacific Coast. The list includes sixty new charts and seven new publications from San Diego to the Aleutians. Copies of the list will be mailed free to anyone who calls or writes for it.

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Puget Sound Port Engineers

(Continued from Page 42)

then 1200 pounds per square inch gage; temperatures meanwhile increased slowly and stuck at 750 degrees F. in 1926. Increased temperatures awaited further developments and tests of various types alloys. This program was carried on during the depression years, and had yielded knowledge of how to produce materials that will resist distortion at temperatures of 1000 and 1050 degrees F.

"Today we find the average central station turbine has a capacity in the order of 40,000 KW; it operates with throttle steam conditions of 850 pounds gage, 900 degrees F., and its generator is hydrogen cooled. This compares with the standard conditions of 600 pounds and 850 degrees as used by the Navy during the war. Exceptional central station units make the headlines today. For example, a new unit, the largest of its type in the world, recently installed and operating in the Essex Street Station of the Public Service Electric and Gas Company, New Jersey. With the generator of this unit weighing 178 tons alone, the unit is a 100,000 KW-3600 RPM-turbine generator set designed for steam conditions of 1250 pounds per square inch—1000 degrees F —and 1.5 inches HG Abs. back pressure. The last stage buckets are 23 inches long, have a tip-speed of 1390 feet per second. It is to be noted that speed of sound is only 1100 feet per second."

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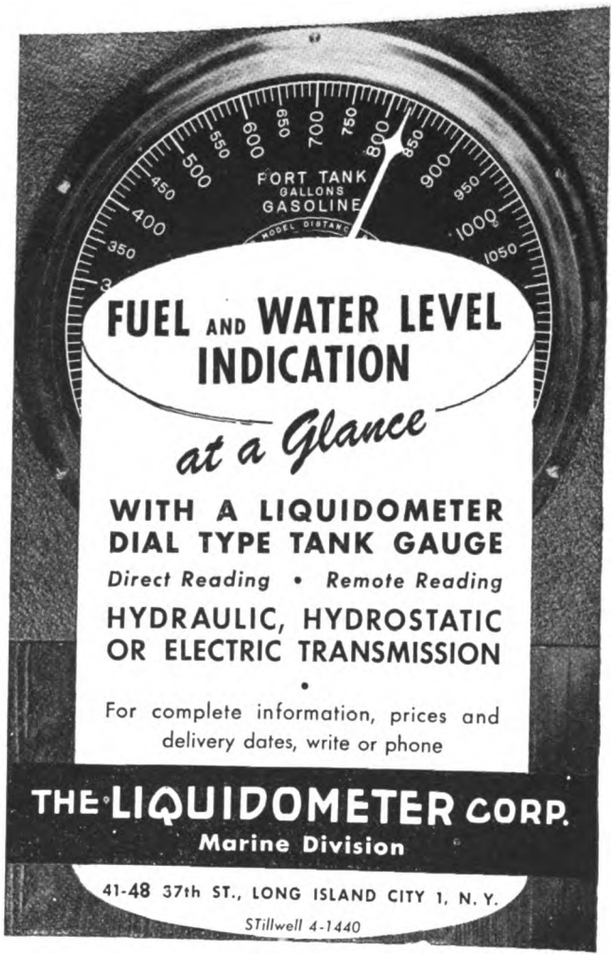
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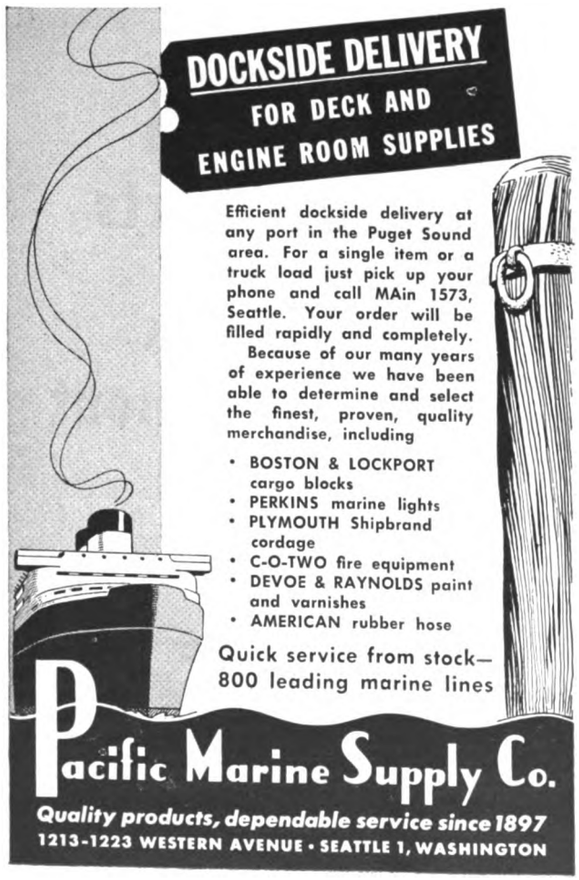
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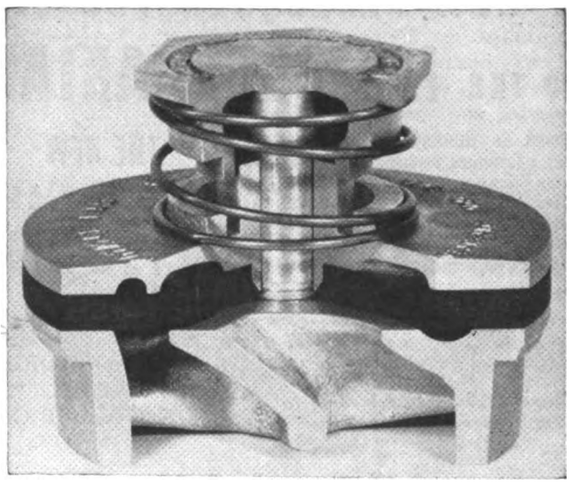
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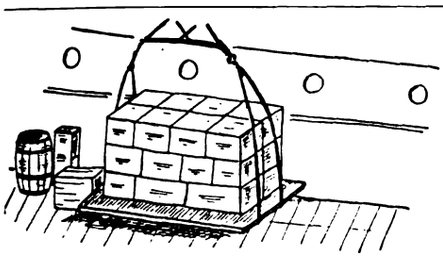
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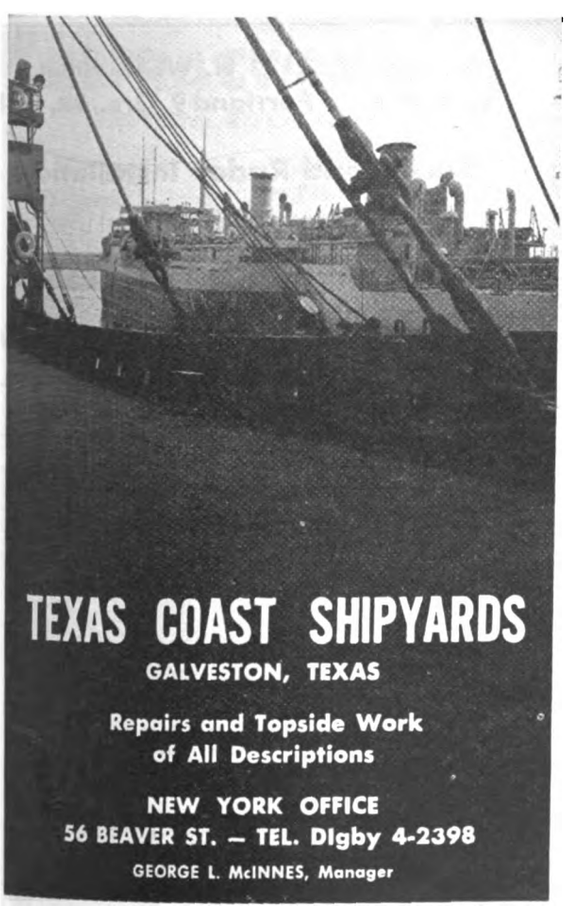
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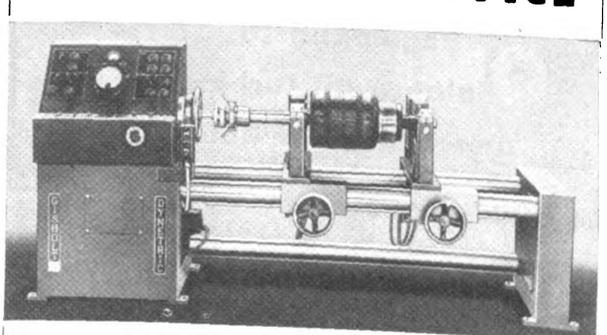
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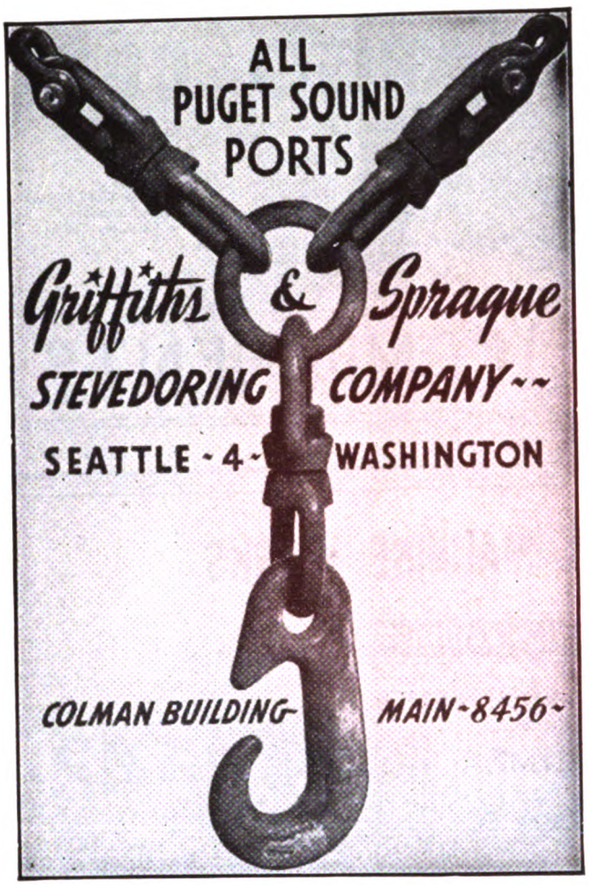
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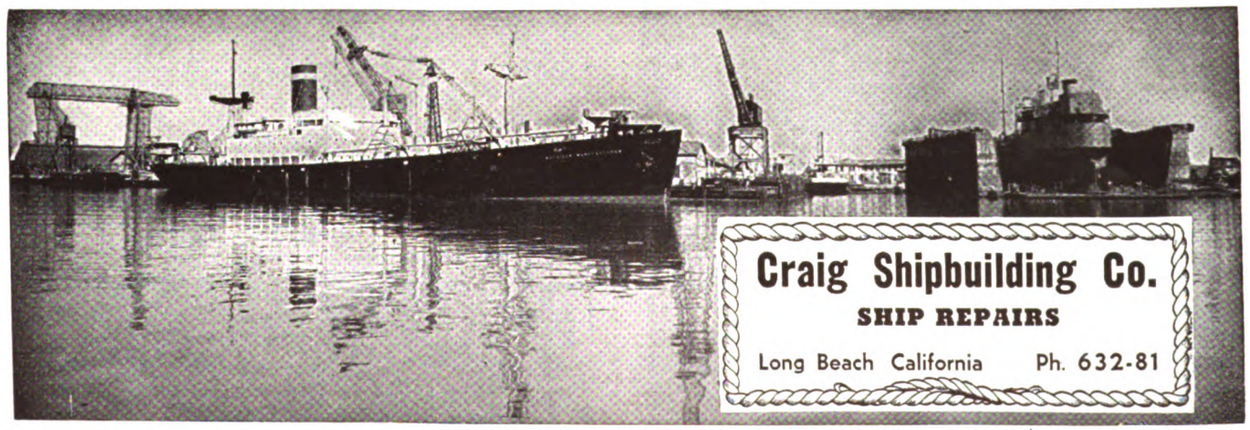
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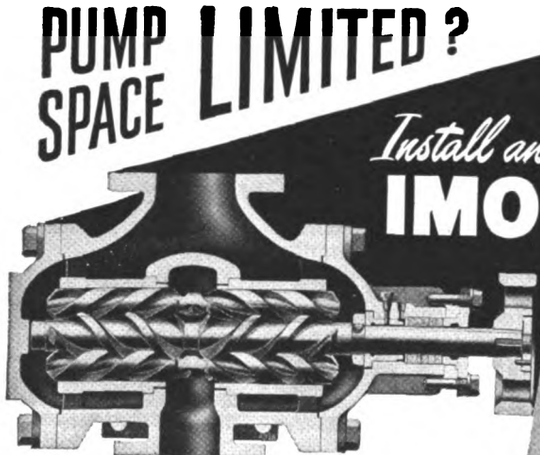
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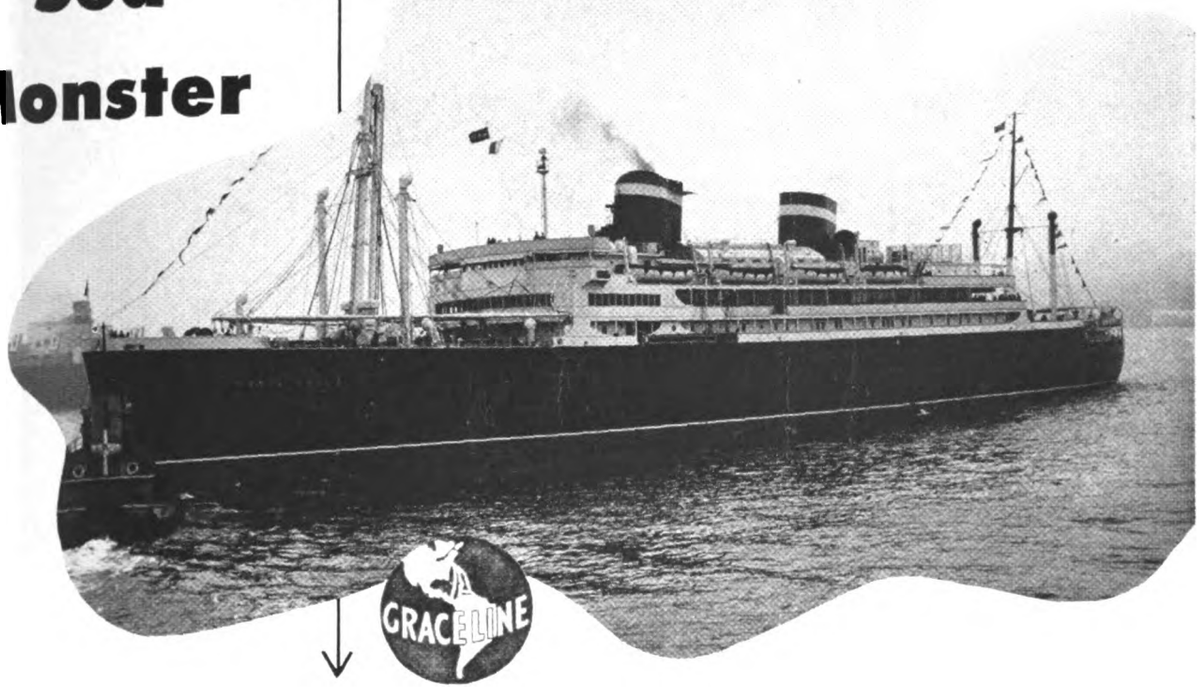
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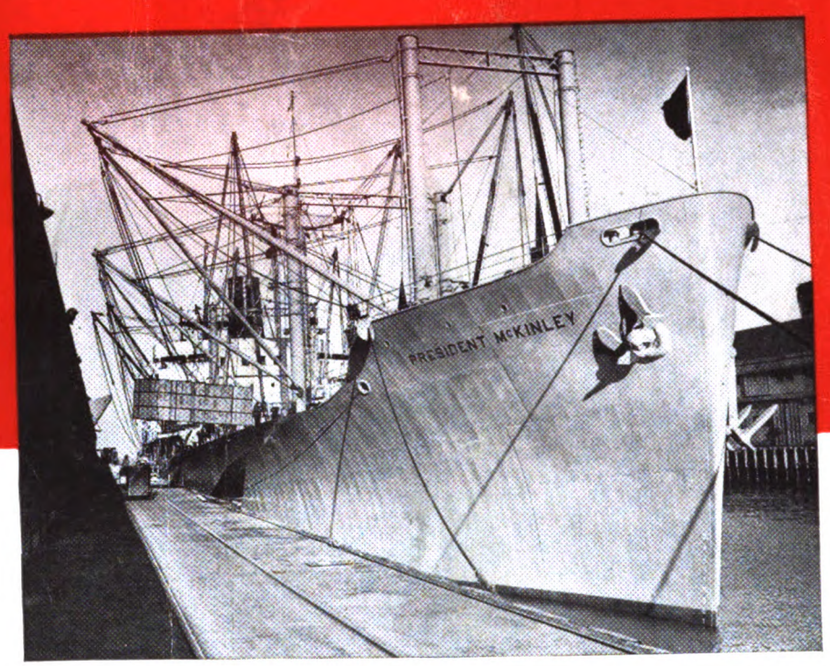
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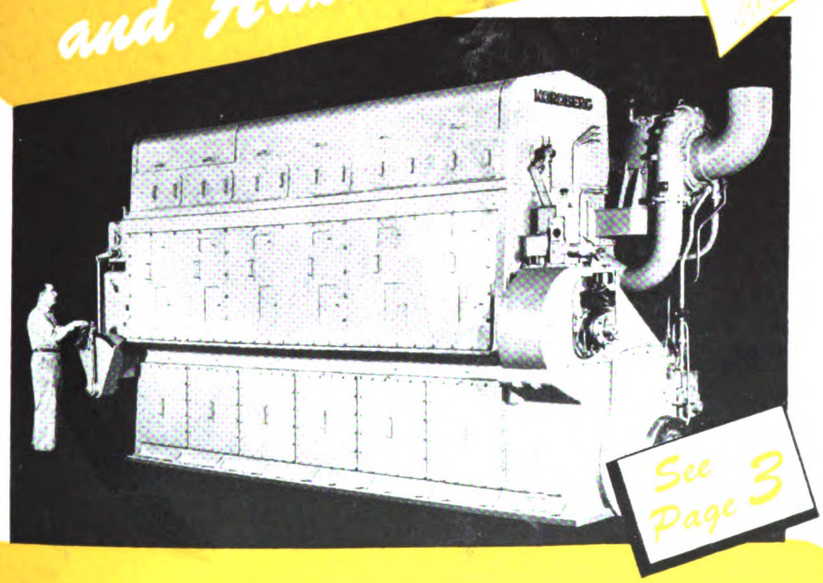
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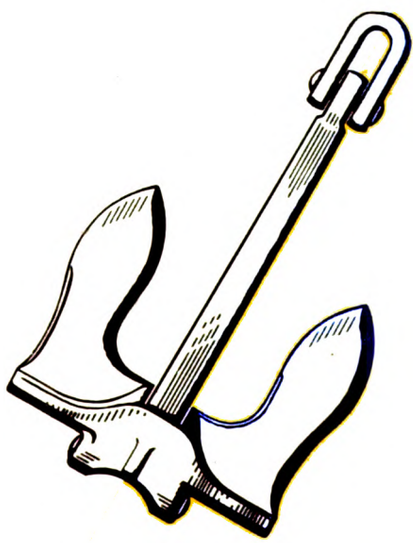
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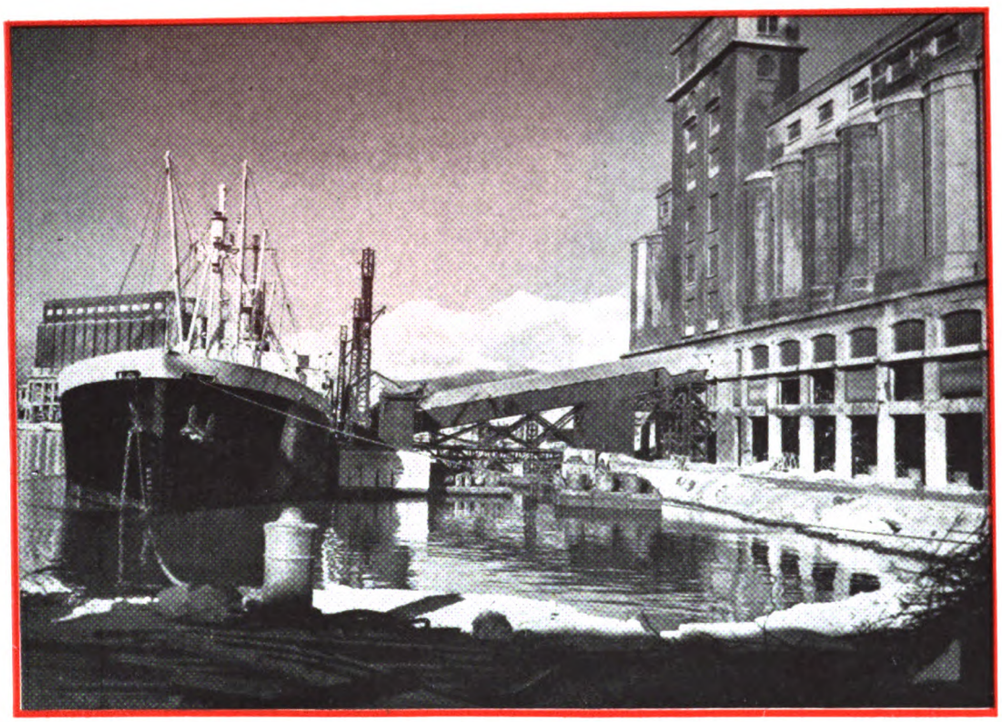
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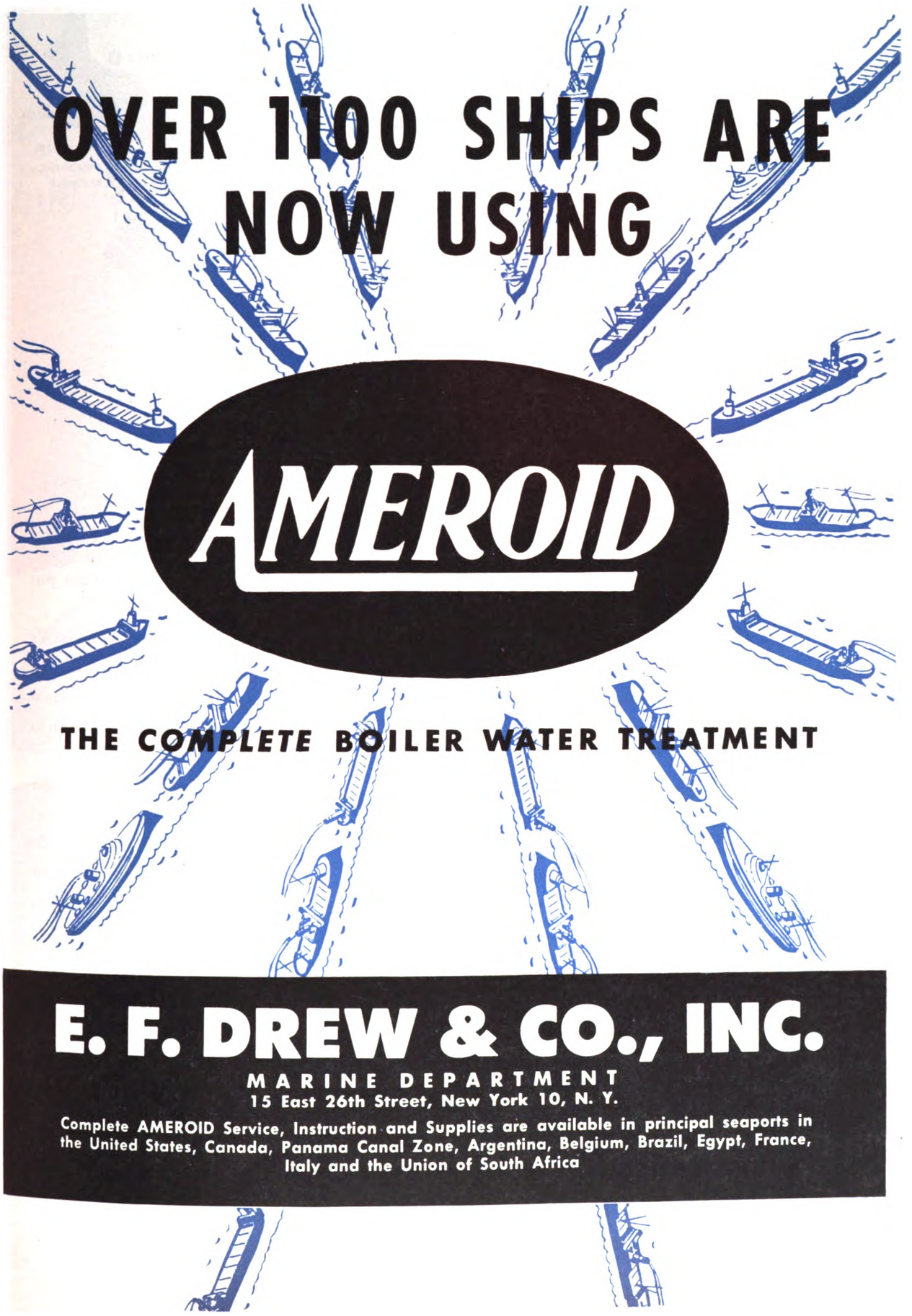
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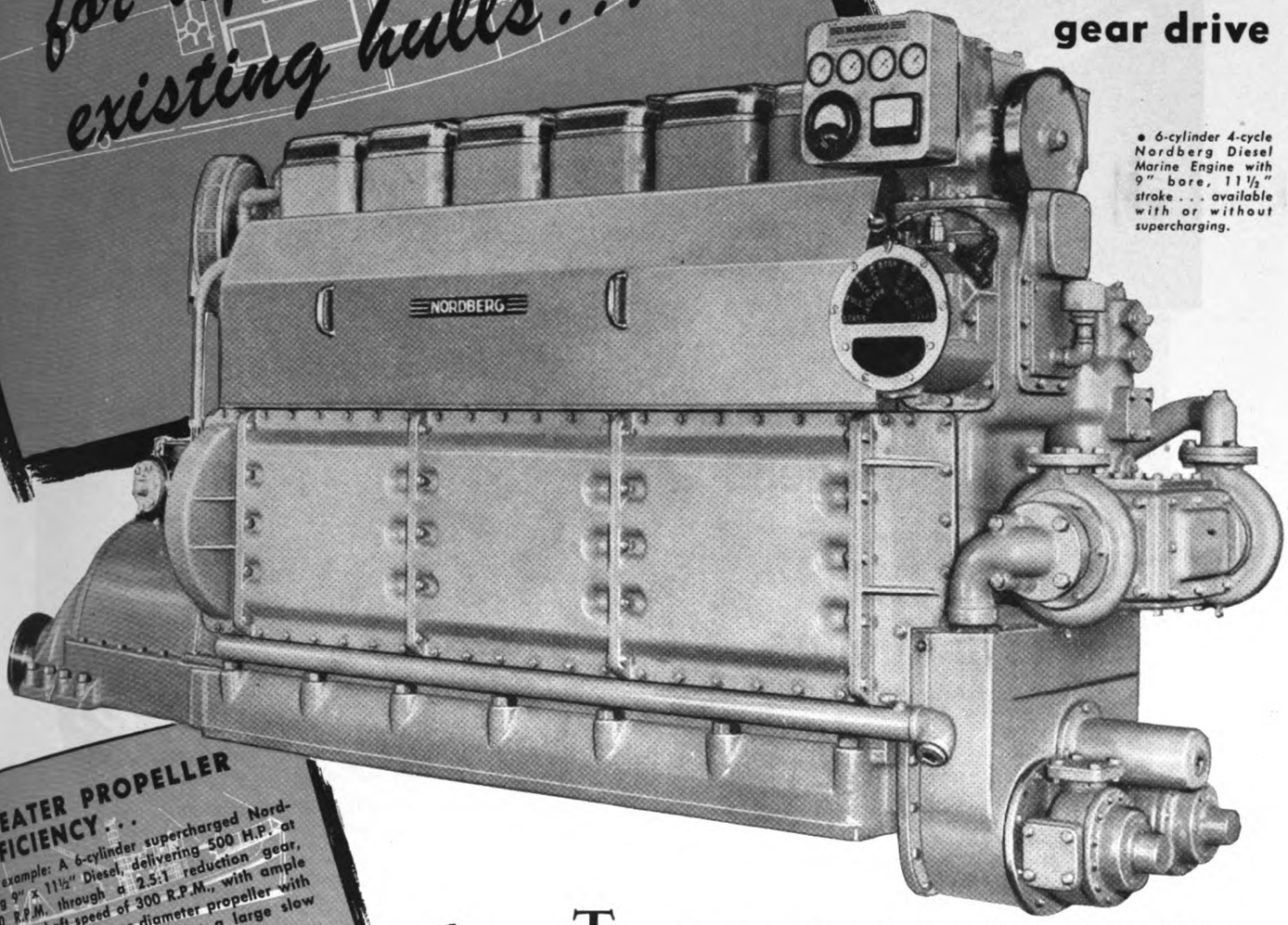
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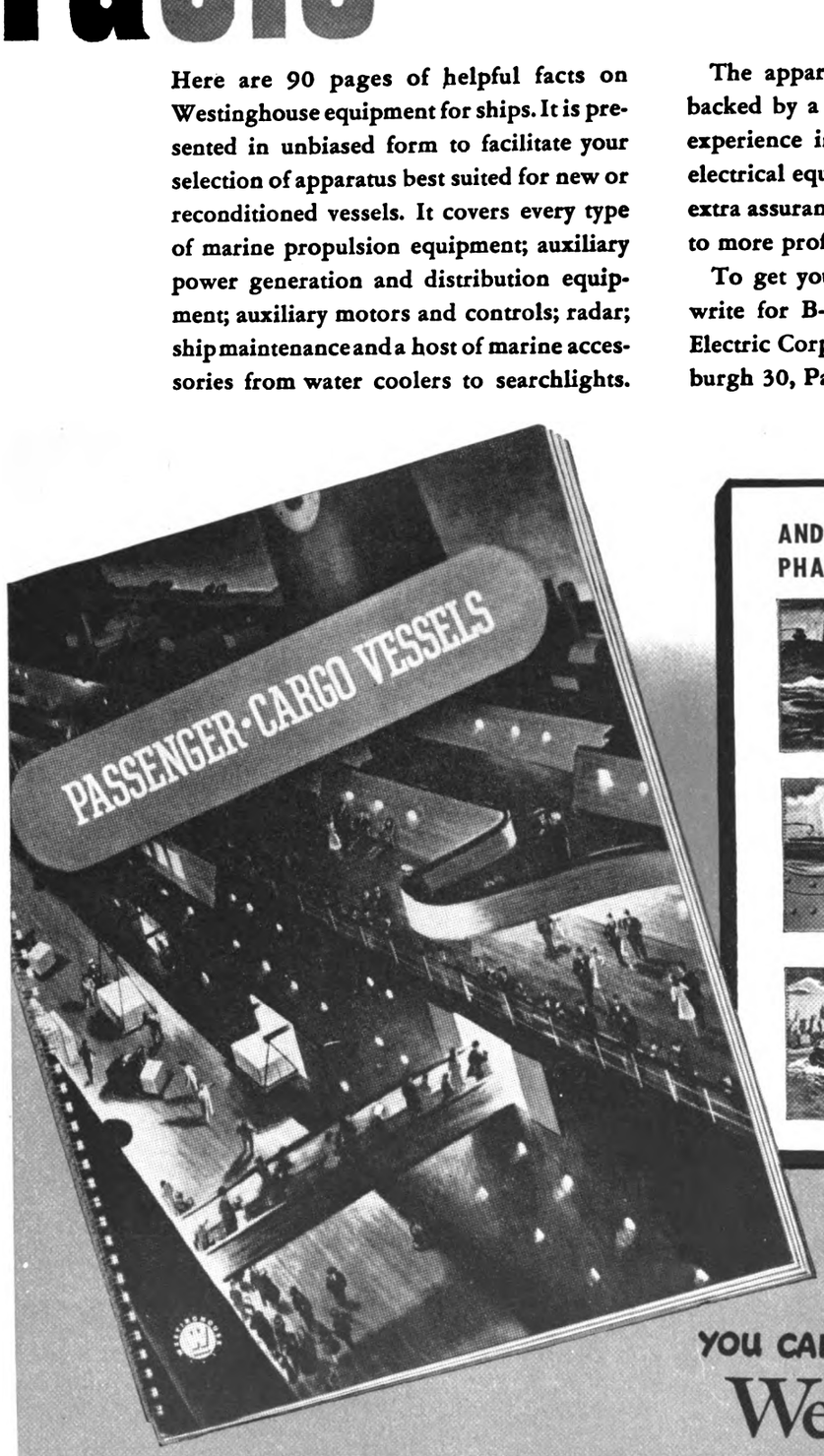
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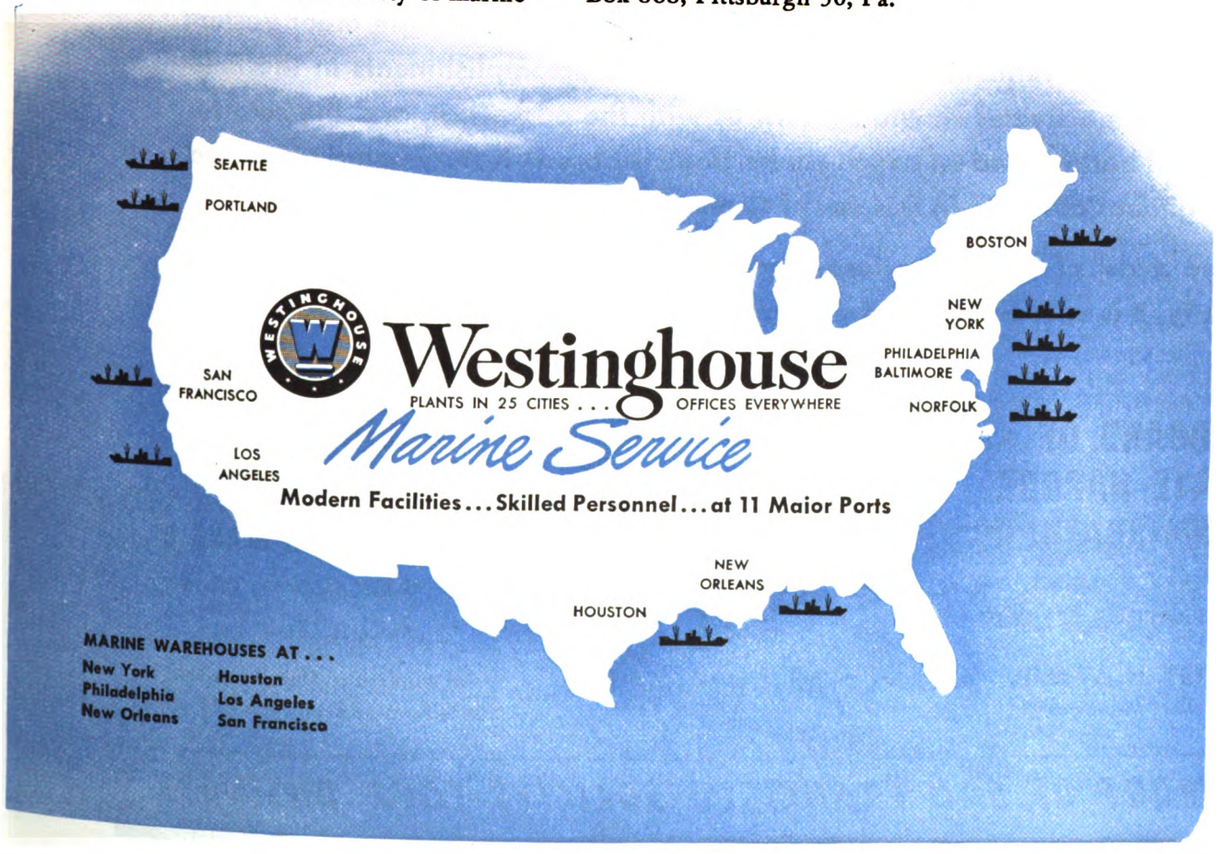
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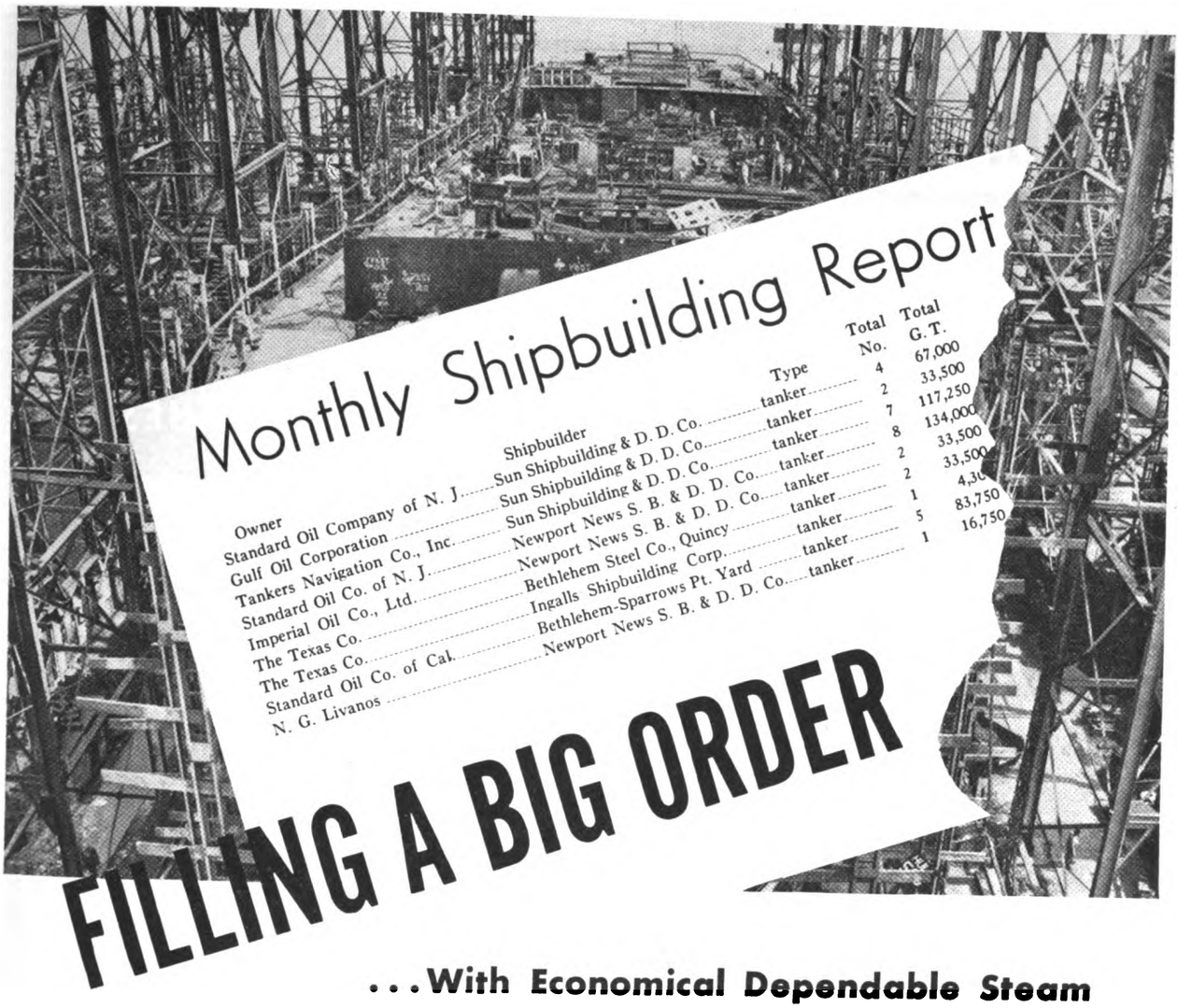


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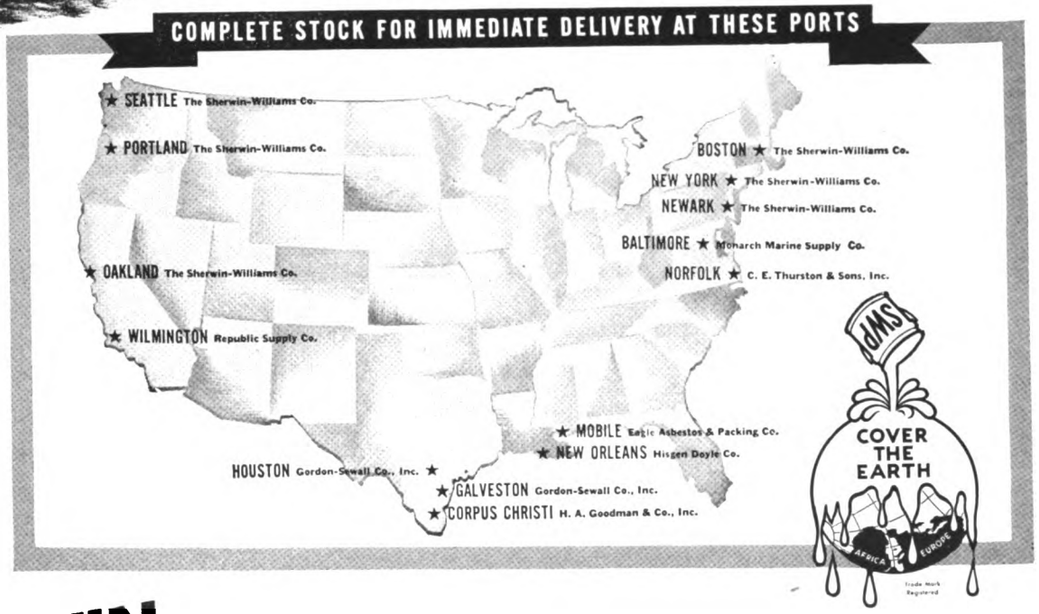
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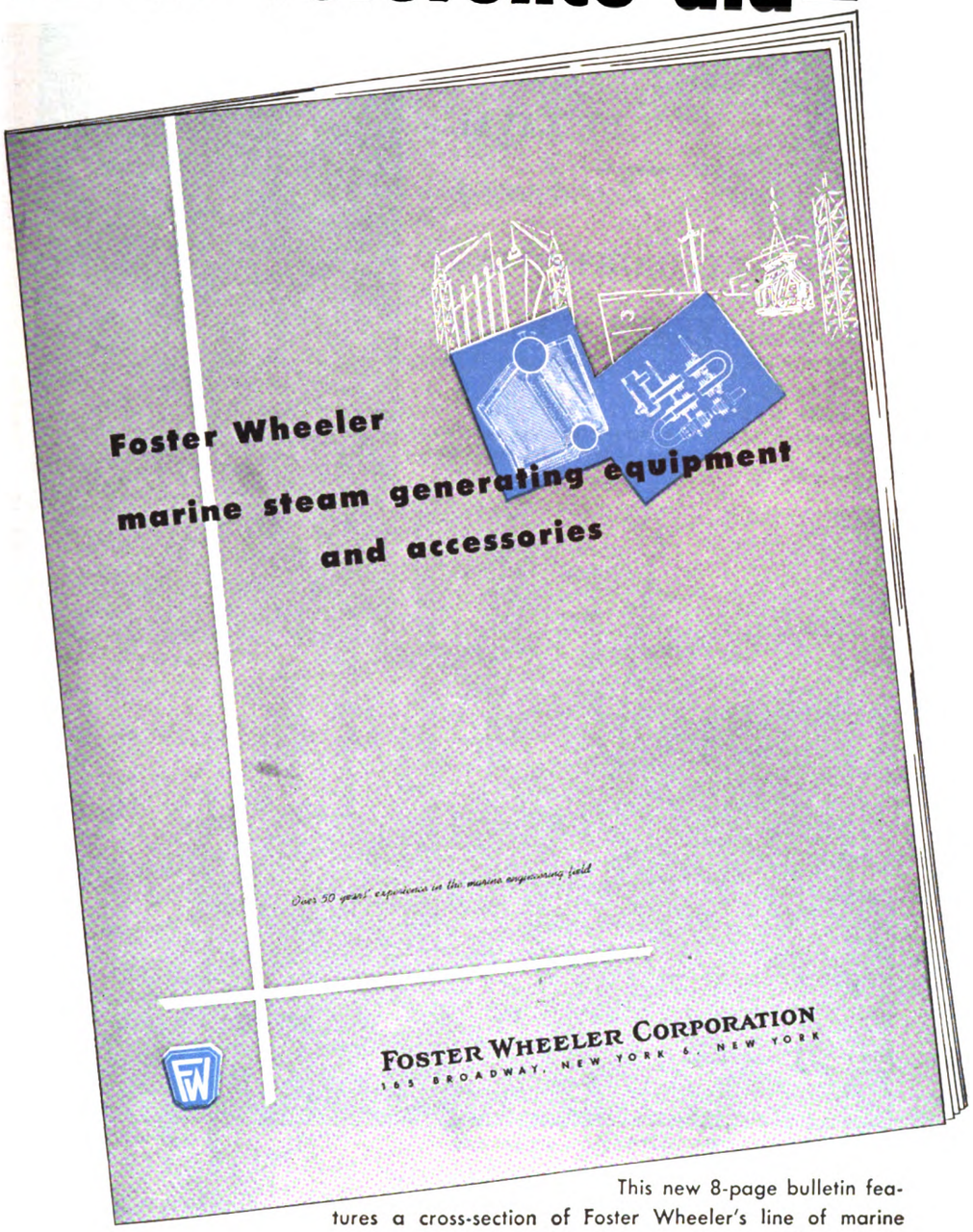
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Effectively illustrated with drawings and photographs, the bulletin should prove a handy reference aid to ship-builders, marine engineers, and all others concerned with marine power plants and accessories.

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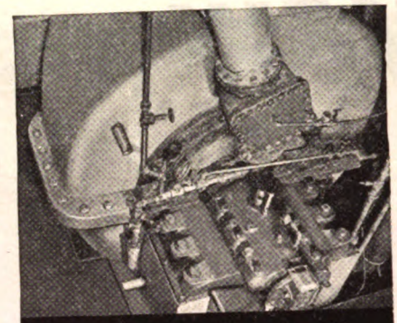
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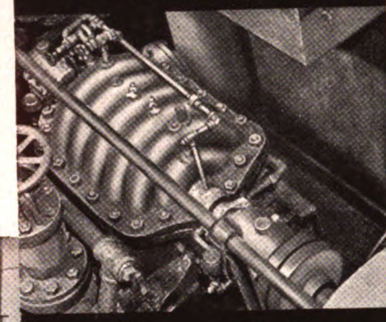
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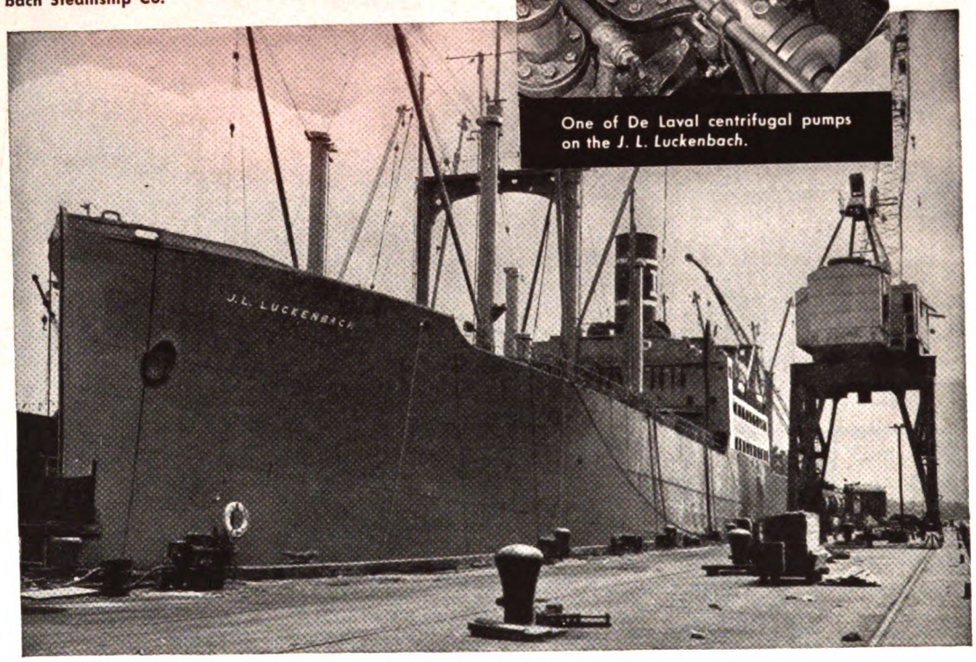


De Laval turbine still in use after 28 years of service.



One of De Laval centrifugal pumps on the J. L. Luckenbach.

J. L. Luckenbach. 13,000 ton 5,000 HP freighter completed March, 1919 by the Sun Shipbuilding Co. for the Luckenbach Steamship Co.



After 28 years of service, and 1,300,000 miles, the De Laval geared turbines, feed pumps and generators on the J. L. LUCKENBACH are still in such good condition that no major repairs or replacements have been required in refitting the ship for post war service.

For over thirty years, De Laval geared turbine propulsion units have proved their rugged reliability. The latest designs also offer the utmost in economy of fuel, space and weight.

Atlanta • Philadelphia • Los Angeles
Chicago • Pittsburgh • San Francisco
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DE LAVAL

New York • Kansas City • Vancouver
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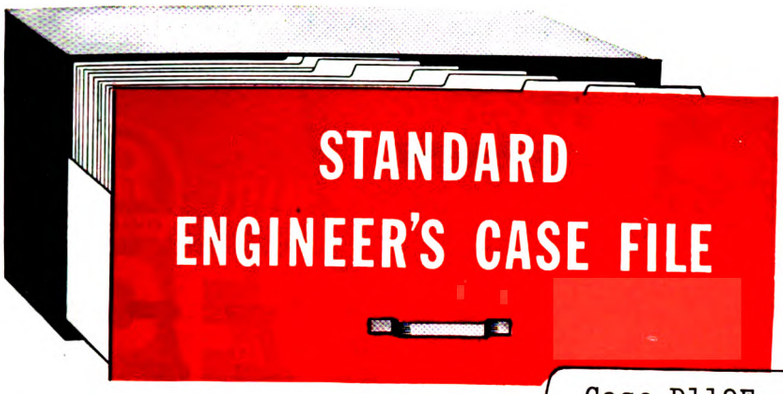
MARINE DIVISION

DE LAVAL STEAM TURBINE COMPANY • TRENTON 2, N. J.

N-9

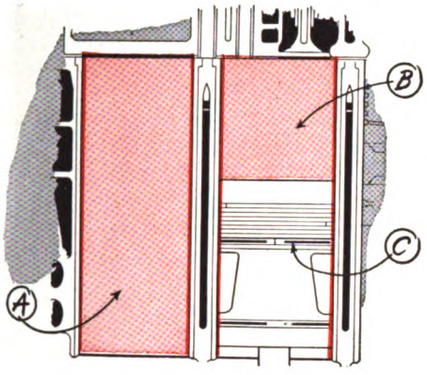
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Case D119E--Reducing Wear on Liners in Diesels



DIESEL ENGINE LINERS AND PISTON

In high-speed Diesel engines lubricated with RPM DELO Diesel Engine Lubricating Oil, wear on liners was held to a minimum with little variation over their entire areas. A constant lubricating film was maintained on them even in high-temperature belts. RPM DELO Oils are recommended for all types of Diesels. Come in all viscosity grades necessary for your engines.

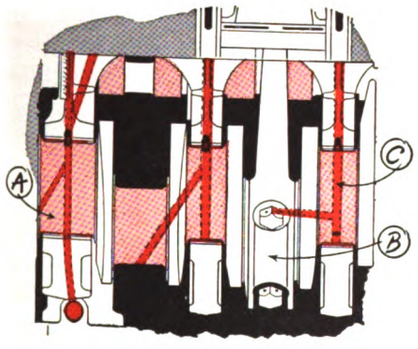
A. Special additive provides metal-adhesion qualities...keeps oil on all parts whether hot or cold, running or idle.

B. An anti-oxident resists formation of lacquer—resistance to extreme heat provides lubrication in the toughest conditions.

C. Contains detergent which keeps rings clean and operating freely...prevents scratching and gouging of liners.

RPM DELO Diesel Oil will not corrode any bearing.

Case D119F--Prolonging The Lives of Diesel Bearings



SECTION OF DIESEL ENGINE CRANK AND CAM

No bearing failures occurred between overhaul periods in Diesel engines used in the toughest service when they were lubricated with RPM DELO Diesel Engine Lubricating Oil.

A. Non-corrosive to all types of bearing metal...inherent ability of base stocks and added compound resist oxidation and formation of acid which is common cause of bearing corrosion.

B. Maintains a tough lubricating film which withstands excessive shocks and pressures.

C. Special detergent compound keeps oil passages clean and open - allows free flow of lubricant to vital points.

Another compound in RPM DELO Oil prevents foaming of the oil. An accurate measurement of crankcase levels can always be obtained.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

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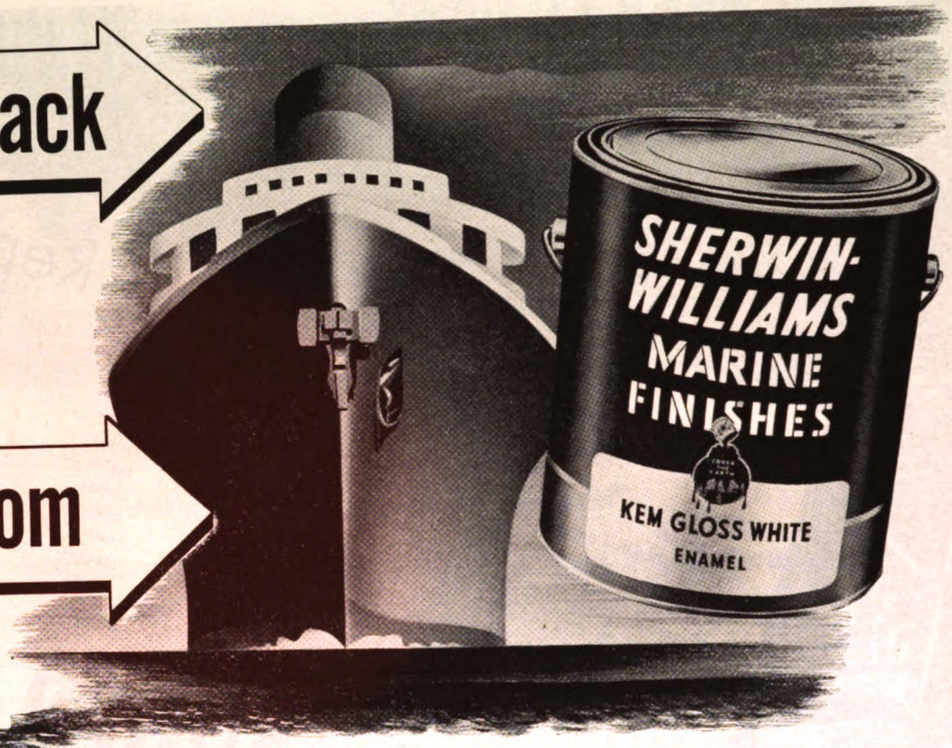
DIESEL ENGINE RPM DELO LUBRICATING OIL

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from Stack

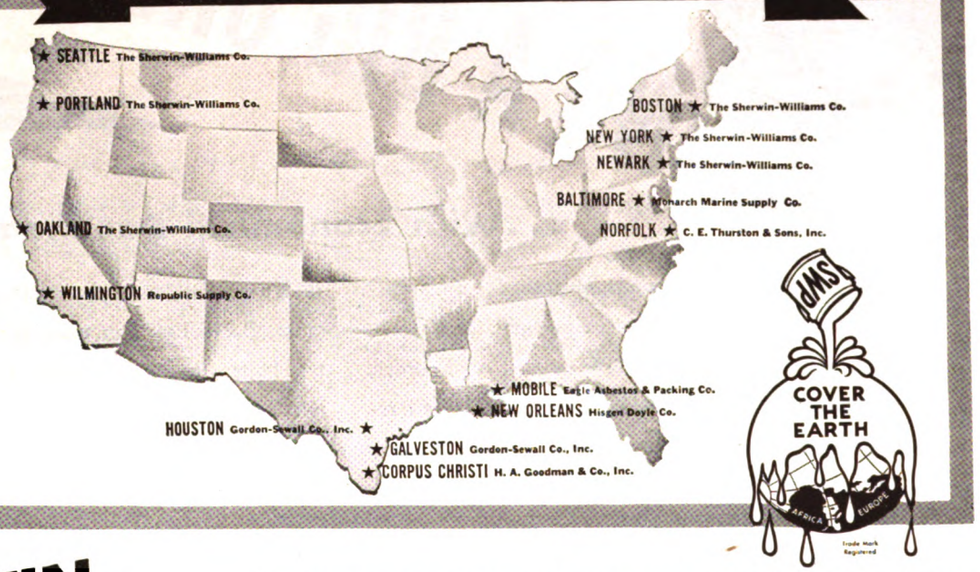
Signal Colors
Superstructure Paints
Deck Finishes
Engine Enamels
Cabin Finishes
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to Bottom

Cargo Hold Finishes
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Anti-Fouling Compositions

COMPLETE STOCK FOR IMMEDIATE DELIVERY AT THESE PORTS



IT'S SHERWIN-WILLIAMS ALL THE WAY!

Yes, from stack to bottom, from stateroom to engine room, ***wherever*** there's a shipboard job for paint to do, there's a Sherwin-Williams finish ***designed*** for the job! Designed ***two ways!***

(1) Because ***every*** finish in the line is engineered by Sherwin-Williams specifically for the conditions ***all*** marine paint must encounter—the conditions under which the paint is put on, the conditions it meets in service.

(2) Because ***each individual*** finish is specially formulated to meet the ***added*** requirements of its particular application.

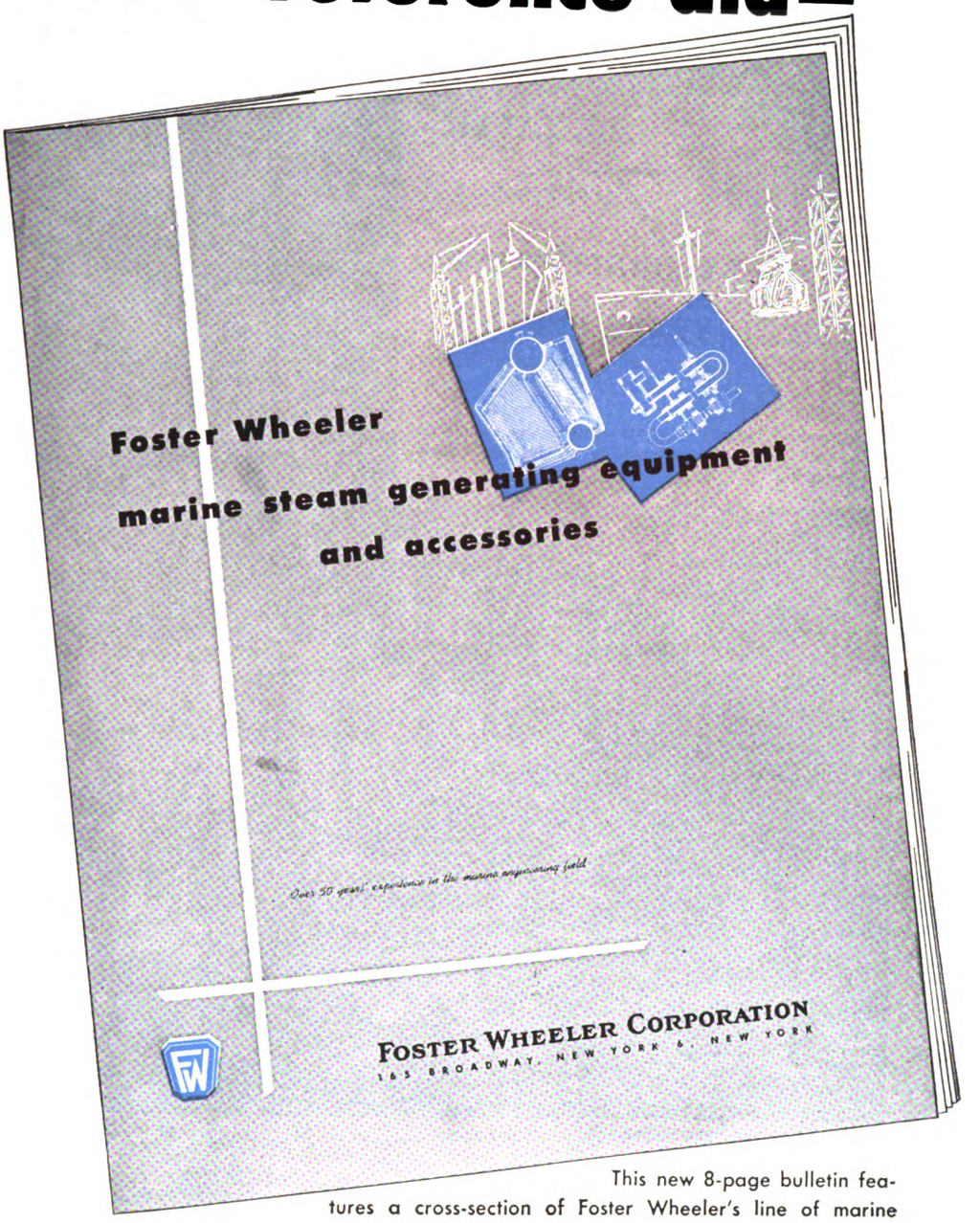
A single source of supply, a single standard of quality—that's Sherwin-Williams for marine finishes! The Sherwin-Williams Co., Marine Division, Cleveland 1, Ohio. (Export Division, Newark, N. J.)

Products of Sherwin-Williams Industrial Research

SHERWIN-WILLIAMS MARINE FINISHES

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a *NEW* reference aid—



This new 8-page bulletin features a cross-section of Foster Wheeler's line of marine equipment (steam generators, economizers, distillers, feedwater heaters, condensers, etc.).

Effectively illustrated with drawings and photographs, the bulletin should prove a handy reference aid to ship-builders, marine engineers, and all others concerned with marine power plants and accessories.

Write for Bulletin
M-48-13

FOSTER WHEELER CORPORATION
165 Broadway, New York 6, New York

FOSTER WHEELER

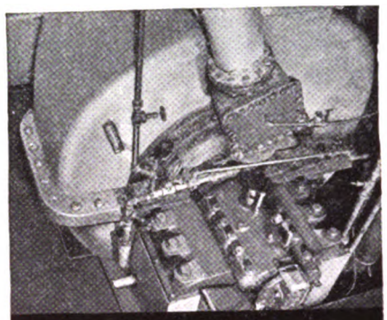
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DE LAVAL

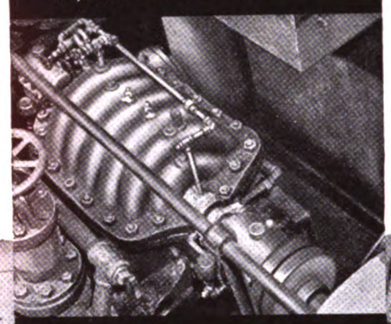
Turbines

REQUIRE NO RECONDITIONING

AFTER 28 YEARS SERVICE

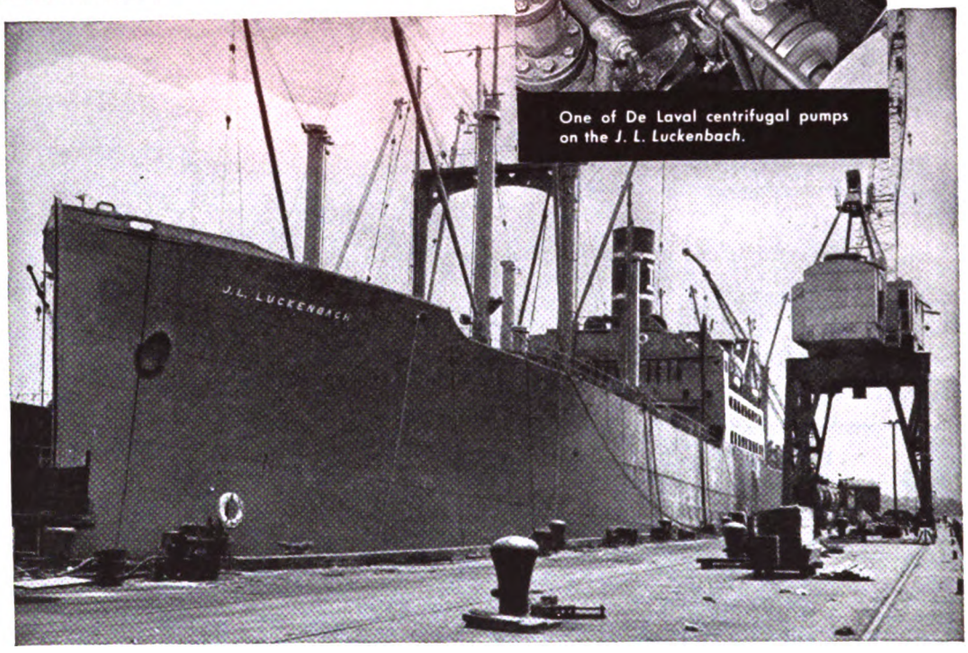


De Laval turbine still in use after 28 years of service.



One of De Laval centrifugal pumps on the *J. L. Luckenbach.*

J. L. Luckenbach. 13,000 ton 5,000 HP freighter completed March, 1919 by the Sun Shipbuilding Co. for the Luckenbach Steamship Co.



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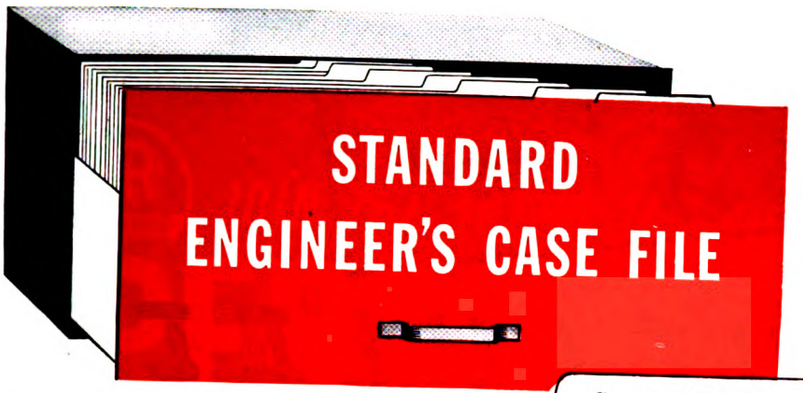
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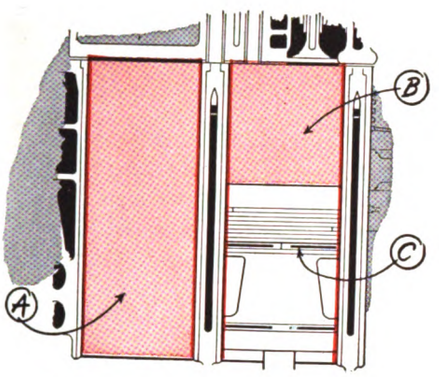
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Case D119E--Reducing Wear on Liners in Diesels



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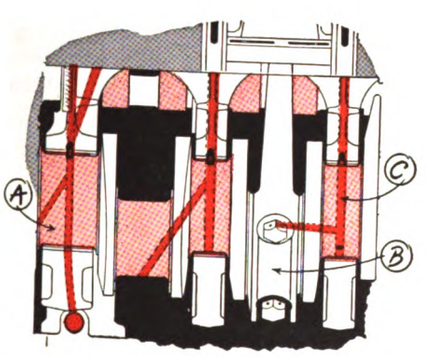
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Don't take our word for Fuelkleen's economy and efficiency. Try it, and prove to yourself that it will net you money on:



You get the utmost BTU efficiency from your oil for both steam and diesel power when you use Fuelkleen. Sludge, foreign matter, oil and water emulsions are broken up and removed—rings and nozzles are kept clean—fuel atomization and combustion are improved.



A Fuelkleen job can often be done for as little as 5% of manual cleaning cost, saving you a cool 95% of the job. There is no waste of oil, no sludge removal problem. Fuelkleen dissolves dirt and gummy deposits in tanks, pipe lines and preheaters; gets rid of them quickly.



Because Fuelkleen keeps tanks, lines, heaters and boilers clean, you'll have much lower maintenance costs. Fuelkleen protects against pitting and corrosion, eliminates water in oil emulsions, and the dirt that causes trouble.

Fuelkleen is not a "conventional" cleaner. It is a revolutionary formula with a chemical action that neutralizes and dissolves sludge, reclaiming its oil content. Fuelkleen will not injure metals and is not explosive. It is easily applied.

Find out now how you can save with Fuelkleen. Send for the 20-page Sumco manual describing the Fuelkleen process and other phases of ship cleaning. Please write on your business letterhead.

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Manufacturers of **FUELKLEEN • TUBEKLEEN • HEATERKLEEN • AQUAKLEEN • OILKLEEN • SUMCO SUDS**

REPRESENTATIVES: Power Engineering and Supply Co., Seattle 4, Washington; Sumco Products Agency, San Pedro, California; Western Ship Service Co., San Francisco 5, California; Boiler & Engineering Service & Supply Co., Portland 9, Ore.; Galveston Ship Supply Co., Galveston, Texas; Galveston Ship Supply Co., Houston, Texas; Gulf Coast Marine Supply Co., Mobile, Ala.; Interstate Sales and Supply Co., New Orleans, La.; T. Roddy Lanigan Co., Miami, Florida; Hal F. Sterne Company Charleston, South Carolina.

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PERFORMANCE



Preformed
"Blue Center"
Wire Rope

A FIRST SPECIFICATION IN MARINE SERVICE

WHEN YOU PULL DOWN COSTS these days it's something to brag about. And with Preformed "Blue Center" Wire Rope you can cut costs to the minimum.

"Blue Center" Steel—made only by Roebling—provides shock resisting stamina and toughness. The Preforming process—improved and perfected—simplifies installation, reduces whipping and vibration, improves winding. It is not inclined to twist and kink . . . is easy to handle and install . . . can be cut without seizing. This combination of advantages gives unsurpassed life and serviceability.

Roebling Wire Rope is one of the best-known products in industry today. There's a type and size for every kind of service. Have your Roebling Field Man suggest the *one* rope best adapted to your needs. John A. Roebling's Sons Co. of Calif.—San Francisco—Los Angeles—Seattle—Portland.

WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. ★ *Boston*, 51 Sleeper St. ★ *Chicago*, 5525 W. Roosevelt Rd. ★ *Cleveland*, 701 St. Clair Ave., N. E. ★ *Denver*, 1635 17th St. ★ *Houston*, 6216 Navigation Blvd. ★ *Los Angeles*, 216 S. Alameda St. ★ *New York*, 19 Rector St. ★ *Philadelphia*, 12 S. 12th St. ★ *Pittsburgh*, 855 W. North Ave. ★ *Portland, Ore.*, 1032 N. W. 14th Ave. ★ *San Francisco*, 1740 17th St. ★ *Seattle*, 900 First Ave.

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Anchor Chain and Joining Links

A combination that saves time when paying out and heaving in the anchor.

Elimination of all special links and shackles, uniformity of links and extreme strength of Naco Steel are features that have put Naco Chain in first place for dependability and smooth operation.

Naco Stud Links are made in one piece of metal having a minimum tensile strength of 100,000 lbs. per square inch.

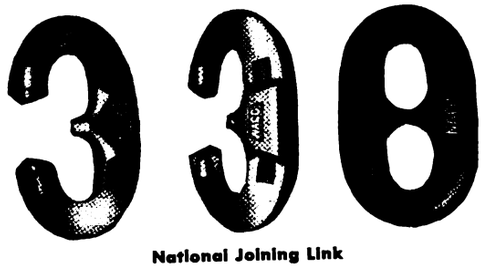
JOINING LINKS OF EQUAL STRENGTH

E-Z and National Joining Links and Anchor Joining Links are of similar size and shape to the chain with which they are used. Made of the same steel as the chain, they're proof tested to the same loads.

You'll have the finest combination of speed and safety with NACO Chain and Joining Links.



E-Z Anchor Joining Link



National Joining Link

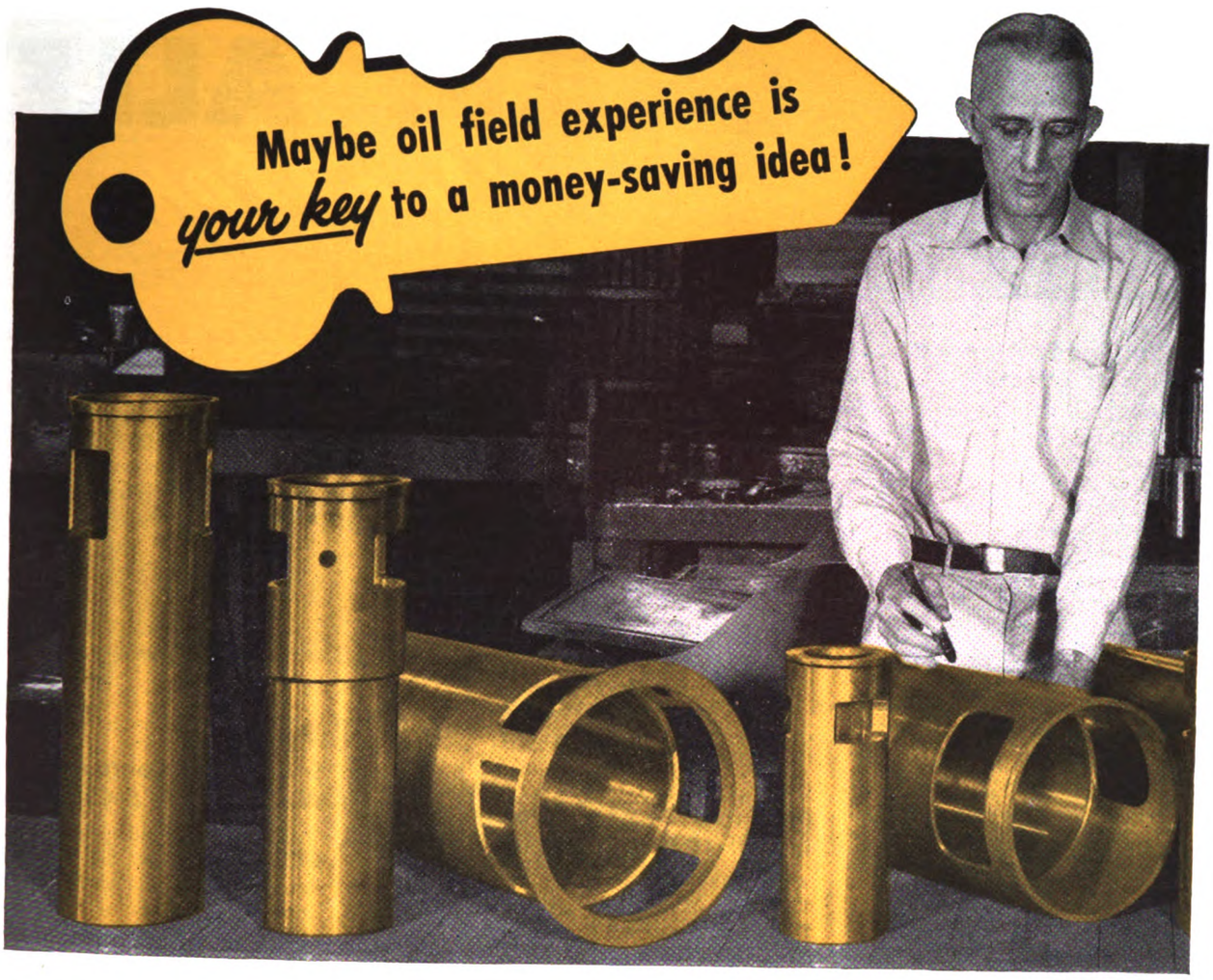
Pacific Coast Representative:
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Established 1868

NACO ANCHOR CHAIN
TRADE MARK

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY
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THE bronze parts shown above are pump liners. Soon they'll be in tough, continuous service, mostly in the oil fields. Here, strength, wear-resistance, uniformity, and freedom from imperfections are especially important! Oil field experience proves that these liners have those very qualities in *extra* measure! Here's why:

These parts, like thousands of others of many types, were first cast *centrifugally* by the Shenango-Penn process, then finish-machined in the modern Shenango-Penn shops. This process cinches *many* advantages . . . such as finer, pressure-dense grain, an 8 to 20% increase in tensile, exceptional resistance to wear and distortion, up to 30% greater elongation, *positive* relief from sand inclusions and blow holes, and big savings in metal and machining time.

What symmetrical parts, big or little, ferrous or non-ferrous, go into the machinery you build or use? How about bushings, bearings, liners, sleeves, rolls, roll covers, rings, cylinders, tubes or similar items? Shenango-Penn engineers welcome the chance to show you how you can combine better performance with savings in time and money . . . right from the blueprint stage on through!

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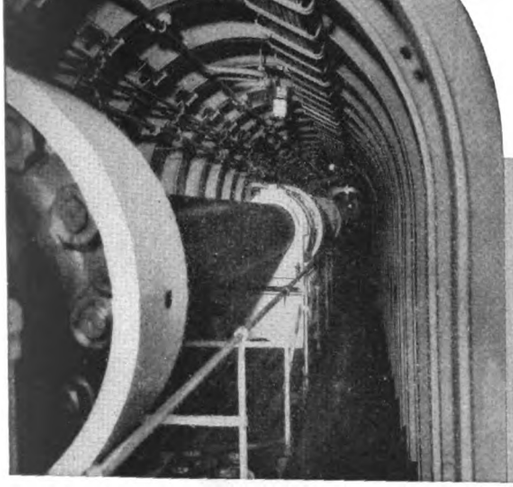
FREE BULLETINS

No. 143—Centrifugal castings of non-ferrous metals and alloys.
No. 144—Centrifugal and static castings of plain and alloyed irons.
No. 145—Centrifugally cast bushing stock in all standard sizes.

SHENANGO-PENN

ALL BRONZES • MONEL METAL
NI-RESIST • MEEHANITE METAL®

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SHAFT ALLEY Chatter

B. A. McLean Opens American Bureau Office at Trieste

Basil McLean, principal surveyor at Portland, Oregon, for American Bureau of Shipping left that city in mid-January to open an ABS office at Trieste, Italy. Construction of six 25,000 ton ships in the area to American Bureau classification has necessitated opening of the bureau office at Trieste. Mrs. McLean, a bride of two months, accompanied Mr. McLean to Trieste. McLean's duties at Portland are being handled by Frank Gallagher of the Seattle office acting as principal surveyor.

⚓ ⚓ ⚓

Funch, Edye & Co., Inc., of New York, announced the election of Thomas J. Royden as director and vice president.

THIS MODERN BUILDING . . . is the new home office of the Waterman Steamship Corp., and its subsidiary and affiliated interests, at 61 Saint Joseph St., Mobile, Alabama. The building is 16 stories high, completely air-conditioned and equipped with the most modern indirect lighting system. Waterman subsidiaries now occupying offices here are the Gulf Shipbuilding Corp., Pan-Atlantic Steamship Corp., Ryan Stevedoring Co., Inc., Waterman Foundry and the Waterman Repair Division.



Pate Is Guest Speaker At New Orleans Propeller Club

Guest speaker for a special membership luncheon held February 2 by the New Orleans Propeller Club was L. B. Pate, national president of the Propeller Club of the United States.

Formerly an executive of the Mississippi Shipping Company in New Orleans and New Orleans Propeller Club president from 1937 to 1940, Pate is well-known in Gulf shipping circles. He is now vice president of Seas Shipping Company in New York operating the Robin Line of flag vessels between ports of the North Atlantic and East Africa.

⚓ ⚓ ⚓

Mariners Club of California Install 1949 Officers

New 1949 president of the Mariners Club, San Francisco, is Captain Al T. Berry, marine superintendent of the United States Army Transport Corps in that city. Vice president is Fred Archbold, formerly with Lloyd's Register of Shipping. Governors also elected at the club's January meeting were Fletcher Monson, General Engineering Company, retiring president; Edward J. Schneider, Moore Dry Dock Company; Richard Dineley, Weeks, Howe, Emerson Company; Al Wagner, Wagner & Niehaus and Harold Wrigley, International Paint Company.

⚓ ⚓ ⚓

Interocean Announces Personnel Changes

R. W. Cabell, vice president of Interocean Steamship Corporation, has been transferred from New York to San Francisco to handle general traffic management and public relations.

Edward Walker has been elected assistant vice president of Interocean to work with Mr. Cabell. Mr. Walker has been traffic manager at San Francisco for the Weyerhaeuser Steamship Company's Pacific Coast Direct Line and the Knutsen Line's South American Service. Interocean is agent for both Weyerhaeuser and Knutsen.

S. F. Alioto, who has been traffic manager of Interocean and Knutsen European service, is promoted to manager of European service. H. B. Godwin, traffic manager of the Salen-Skaugen Line since 1946, is promoted to manage this line's Oriental Service. Interocean is agent for Salen-Skaugen.

Charles M. Noble, formerly in charge of Interocean claims and cargo adjustments, succeeds Mr. Walker as traffic manager of the Weyerhaeuser Direct Line.

Harold H. Seifert, New York, eastern traffic manager, is now eastern manager. E. H. Warnke succeeds Mr. Seifert as eastern traffic manager.

⚓ ⚓ ⚓

Subsidiary Company Merges With Sudden & Christenson

Arthur B. Cahill, president of Sudden & Christenson, Inc., San Francisco steamship agents, announced that Sudden & Christenson Overseas Corporation, a wholly-owned subsidiary, has been merged with the parent company. George P. Bradford, who was general manager of the subsidiary firm, has moved to the same post with Sudden & Christenson.

With Waterman Steamship Corporation, Sudden & Christenson maintain the Arrow Line in the intercoastal trade and it also acts as general Pacific Coast agents for Waterman.

TRANSFERS from New York to San Francisco . . . R. W. CABELL, Vice President of Interocean Steamship Corporation.



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Installing a Cargocaire *unit aboard a vessel of the Navy's 'moth ball' fleet. This keeps moisture content of the air below 30% to protect cargoes, machinery, and equipment. The* Cargocaire *is a product of Cargocaire Engineering Corporation, 15 Park Row, New York, N. Y.*

How MONEL helps the Cargocaire System defeat humidity in the Navy's "moth ball" fleet...

Humidity – breeder of corrosion, mildew, and rot – causes untold millions of dollars worth of damage to ships and cargoes.

To help put an end to these heavy losses, Commander Oliver D. Colvin (U.S.N. retired) invented the *Cargocaire System* for hold dehydration. So effective is this system that many famous commercial vessels carry it as standard equipment. The U. S. Navy chose a special type with Monel-sheathed heating units to protect the expensive machinery and armament of the 'moth ball' fleet.

With the help of the *Cargocaire* unit and the Navy's specially developed method of wrapping vulnerable equipment in plastic 'cocoons,' a 7-million dollar destroyer can be preserved for only $110 per year!

A basic *Cargocaire* unit for the Navy consists of three elements: two moisture-absorbing units, and an air-circulating unit. The moisture-absorbing units contain a dehydrant, silica gel. Air from the hold is drawn through these units where the silica gel reduces moisture content to a safe 30%. When the dehydrant of one unit becomes saturated, the circulating air is automatically diverted to the alternate unit.

The silica gel is dried by means of six imbedded, fin-type electric heating units. Because these units deliver radiant heat and are exposed to moisture, designers knew the sheathing had to be made of a metal with an unusual combination of properties. *That is why they chose* MONEL*.

MONEL's high strength and remarkable resistance to rust, corrosion, and heat-embrittlement insures that these heating units in the 'ghost' fleet will be well protected during their entire service life.

EMBLEM OF SERVICE
INCO
TRADE MARK

Fin-type Calrod† unit, made by the General Electric Company, used in the 'moth ball' fleet's Cargocaire *dehydration units. Six of these heaters, rated at 1,300 watts each, heat air to 300° F. to remove moisture from silica gel beds. The protective sheathing is non-rusting* MONEL. *(For high temperatures,* INCONEL* *is used to sheath Calrod units for domestic ranges and industrial applications.)*

Another reason for selecting MONEL is its *workability.* MONEL can be formed and machined with standard shop equipment. It can be welded, brazed, and soldered. Welds in MONEL are as corrosion-resistant as the alloy itself—an important consideration in marine applications.

Whenever you need a truly 'SEAGOIN'' metal—*a metal that for years has proved its outstanding worth in fighting shipboard corrosion*—specify MONEL.

Remember, too, that INCO's Technical Service Department is always ready to help you with corrosion and metal-selection problems. There is no charge, of course.

†General Electric Co. trade mark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.



*Monel**

"...It's the SEAGOIN' metal"*

*Reg. U. S. Pat. Off.

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The vessels pictured here are equipped with General Electric radar.

For safer navigation at low cost, *there is a General Electric Radar for every surface search purpose!*

Here is *performance-engineered* commercial radar tailored to *your* ship requirements. General Electric asked ship masters, operating personnel, and ship owner consultants to pool their ideas on radar equipment—radar that would pay its way against problems of speed, trade routes, available physical space, available power supply, justifiable investment.

Here are the answers—built for you at Electronics Park, G-E's new world center for electronics research and development.

Whatever the size of your vessel—if you're thinking of radar—see GENERAL ELECTRIC!

WRITE TODAY for complete information on Marine Radar by G. E.:
General Electric Co., Room 102, Bldg. 3A, Electronics Park, Syracuse, New York.



Ocean tug *Teton* hauls heavy cargo between Seattle and Alaska.

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SHAFT ALLEY (continued) Chatter



MOLLER'S TRUST EXECUTIVES—Left to right: C. B. MOLLER and R. B. MOLLER meeting in San Francisco with DWIGHT HILL, president of the Lancashire Shipping Company.

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Moller Trust Brothers Meet in San Francisco

Extensive salvage of war-stranded vessels in Okinawa and Philippine waters is being carried on by subsidiaries and associates of Moller's Trust, according to R. B. Moller, London, and his brother, C. B. Moller, Hong Kong, directors of the Trust, who were in San Francisco recently enroute to Hong Kong to confer with another brother, E. B. Moller, managing director of the organization.

In San Francisco they met with Dwight Hill, their United States representative, who is also president of their Lancashire Shipping Company, (USA) Inc., American agent for the round-the-world service of the Castle Line. Olympic Steamship Company is agent for the line on the Pacific Coast of the United States.

Mr. Hill is well-known in west coast marine circles, as he was manager at Portland, Oregon, from 1931 to 1936 for Burchard & Fisken, agents there for the Furness Line. He was in Hong Kong at the outbreak of World War II, in charge of the Moller offices there, was interned six months at Stanley Prison by the Japs and repatriated on the ss GRIPSHOLM. Later he wrote the nationally-syndicated articles titled "Hong Kong Diary" from notes smuggled out of the prison camp in his shoes.

The three Moller brothers are the third generation in the Moller shipping operations, having taken over the management from their father, Eric Moller, Sr., in 1940. The founder of the company was their grandfather, Captain Nils Moller, once a sailing ship captain. Moller's Trust has world-wide interests in shipping, shipyards, repair yards and dry docks.

Their Oriental shipyard interests recently bought gantry cranes from the Marinship yard at Sausalito, California and sent them to Hong Kong for shipyard uses there.

Before the war the Castle Line maintained a fortnightly service westbound around the world with calls at North Atlantic ports and Los Angeles and San Francisco. This service has been reestablished and two vessels, the ss MUNCASTER CASTLE and the ss GREYSTOKE CASTLE, have made one complete voyage. A third, the new 19-knot 12,500-ton, 501-ft. long steamer PENRITH CASTLE is expected to enter the service on her maiden voyage this spring. The PENRITH CASTLE, launched in December from the Blythe Shipyards, a Moller subsidiary at Blythe, England, is the first of four new vessels being built for the Castle service. She is equipped with Cargocaire and refrigeration facilities.

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Coastal Marine Service Occupies New Offices

About three years ago, M. E. Gaines and Joe Lyday founded the Coastal Marine Company. They started this marine repair business in Lyday's garage, with equipment consisting of a lathe, drill press and shaper.

Today they can boast of their new location at Eleventh St. and Houston Ave., Port Arthur, Texas, in a modern two-story brick concrete and steel combination shop and office building.

A Lake Charles plant, under the management of W. E. Cook, was added in 1946, and they have recently opened a marine plant at Norfolk, Va. Earlier in 1948, the company acquired two docks at Sabine Pass from the Sun Oil Company, valued at $250,000, which are being used in ship repair work.

Lester L. White, San Francisco, secretary of the Northern California Section of The Society of Naval Architects and Marine Engineers, has resigned from the construction and repair department of Matson Navigation Company to become chief inspector on the staff of M. J. Ryan, San Francisco naval architect and marine engineer.

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New Marine Company To Transport Crude Oil

Organization of a new marine transport company to move crude oil from offshore locations, principally in the Gulf of Mexico to terminals ashore, was confirmed recently by Edmond J. Moran, chairman of the board of the concern.

The new firm, Offshore Oil Transport Co., which is composed largely of Louisiana and Texas interests pooling equipment and other resources to meet the requirements of a highly specialized operation, already has both ocean-going tugs and barges available.

Benjamin M. Bloomfield, formerly vice-president-director of Lykes Bros., Steamship Co., and now president of Dixie Carriers, Inc. and Bloomfield Steamship Co., is president of the concern.

The main office will be in Houston, with a branch in New Orleans.

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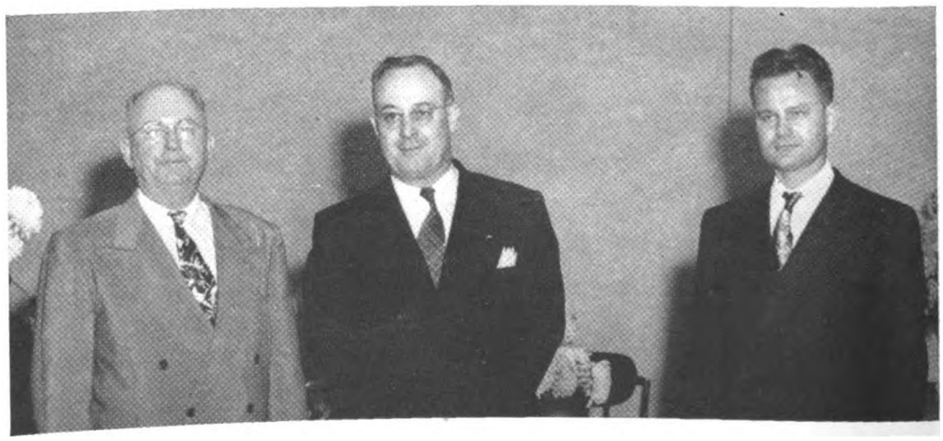
Parry Lines, Inc., New York, have named J. H. Winchester & Company, San Francisco, and Transmarine Navigation Company, Los Angeles, as its agents in those two California ports.

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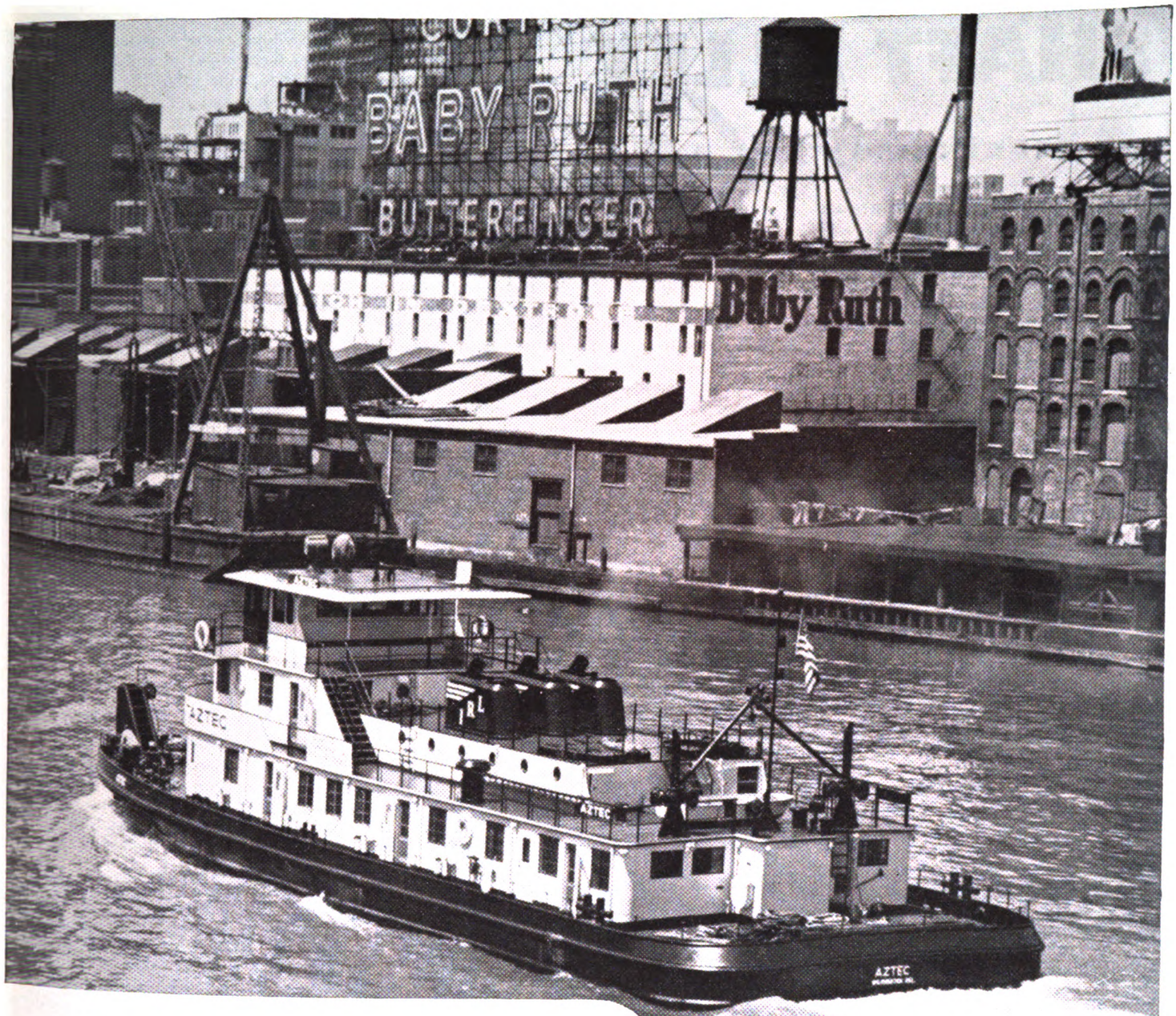
Tacoma Propeller Club Elects New Officers

Elected 1949 officers for the Tacoma Propeller Club were: Shelby R. Coates, harbormaster, City of Tacoma, president; William T. Case, Foss Launch and Tug Company, vice-president; reelected Charles C. Cramp, Shaffer Terminals, Inc., secretary; reelected C. E. How, Shaffer Terminals, Inc., treasurer; and Harold Johnston, Union Pacific Railroad Company and W. A. Springer, Weyerhaeuser Steamship Company for three year terms on the board of governors.

HEADING Coastal Marine Service, Port Arthur, Texas . . . Left to right: W. E. COOK, Partner and Manager, Lake Charles, La.; M. E. GAINES and JOE LYDAY, Partners at Port Arthur.



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SHAFT ALLEY (continued) Chatter

Guerin Elected President of Marine Scribes

Larry Guerin, manager of public relations and advertising for Lykes Bros. Steamship Company, Inc., of New Orleans, has been unanimously elected national president of the Port of Marine Scribes of the Propeller Club of the United States.

Guerin succeeds George Zerr, marine editor of the Pittsburgh Post Gazette. As national president of the Port of Marine Scribes, Guerin is charged with the responsibility of maintaining public interest in the American Merchant Marine.

He is the first man from a Gulf port to be elected to the presidency of the national organization. Some years ago, Guerin served as national vice-president from the Gulf district.

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Bethlehem Program Trains Employees for Leadership

Bethlehem Steel Company's New York District shipyards have put a special technical two-year training program into operation, designed to develop future leadership from among rank and file employees.

Seven men who reside in the New York metropolitan area and represent the Bethlehem Brooklyn 56th St., Brooklyn 27th St., Staten Island and Hoboken yards, already have been enrolled under the new course and are in training.

Arthur Hiltebrant, general manager of the district, explained that the decision to undertake the new training schedule was based upon the fact that expansion of the company's New York yards in recent years had added "many young men of excellent qualifications" to the company's rolls.

General Steamship Announces Personnel Promotions

According to an announcement by Harry S. Scott, president of General Steamship Corporation Ltd., Morse Frazier has been appointed assistant vice president of the corporation.

Mr. Frazier has served the company in its traffic, chartering and terminal activities since he joined the firm nearly 23 years ago. He will continue to have charge of the Transpacific department, handling the company's operations in the Australian and Far East trades.

Emory T. Reynolds has been appointed manager of Ocean Terminals, Ltd., an affiliated corporation, succeeding W. E. Bunker who is being retired after 30 years' of continuous service in this position.

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Fleet Efficiency Contest Pays Off

The officers and crew of Pacific Far East Line's ms LIGHTNING have earned a bonus of one-half month salary by winning the company's Fleet Efficiency Contest. On Christmas Eve Colonel T. S. Lowry, vice president in charge of operations, presented the awards. In addition to the cash prizes the vessel will have "E" for efficiency painted on the stack for the next six month period and will fly a special award burgee designed for the purpose.

The Fleet Efficiency Contest covers a six month period with the first beginning May 31, 1948. It seeks to improve appearance and conditions of ship, crew morale, reduce crew turnover, and increase production.

The four main departments on board ship—deck, steward, engine, purser—are graded for efficiency. The vessel with the highest average for all four is declared the winner. Rating inspections are conducted by qualified shoreside representatives of the various departments when each vessel returns to a Pacific port on completion of a voyage. Every crew member participates in the full award, provided he has been with Pacific Far East Line during the entire period. Crew members with lesser time get pro-rata awards.

The efficiency burgee awarded the LIGHTNING was chosen from a design contest open to company employees, and won by E. M. Caserta, shipping master. The winning pennant carries the company colors, orange and blue, with an "E" in the center. The stack mark design, a large, orange "E," was won by R. B. Clark, inventory department. Both were awarded a $25 Savings Bond.

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A. J. Morrill has been named district manager in Seattle for the Luckenbach Steamship Co. Morrill has been acting manager in that territory since the death of H. E. Rhoda.

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Chubb & Son Announces Three New Partners in Firm

Chubb & Son, insurance underwriters, have announced three new partners have been admitted to the firm—William A. Bonner and Albert Carey Wall of New York and Robert E. Wallace of San Francisco.

Mr. Bonner has been associated with Chubb & Son since 1916 and was appointed manager of the marine department in 1940. Mr. Wallace joined the organization in 1926 and at the present time he is manager of the Pacific Coast Department. Mr. Wall also is a pioneer in the company having been with them since 1925, and recently was manager of the company's New York midtown branch office.

The firm also announces the retirement of Thomas J. Goddard, a member of the firm for 27 years.

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The Sun Oil Company, Marine Department, has appointed Robert J. Ball as port captain at Marcus Hook, Pennsylvania.



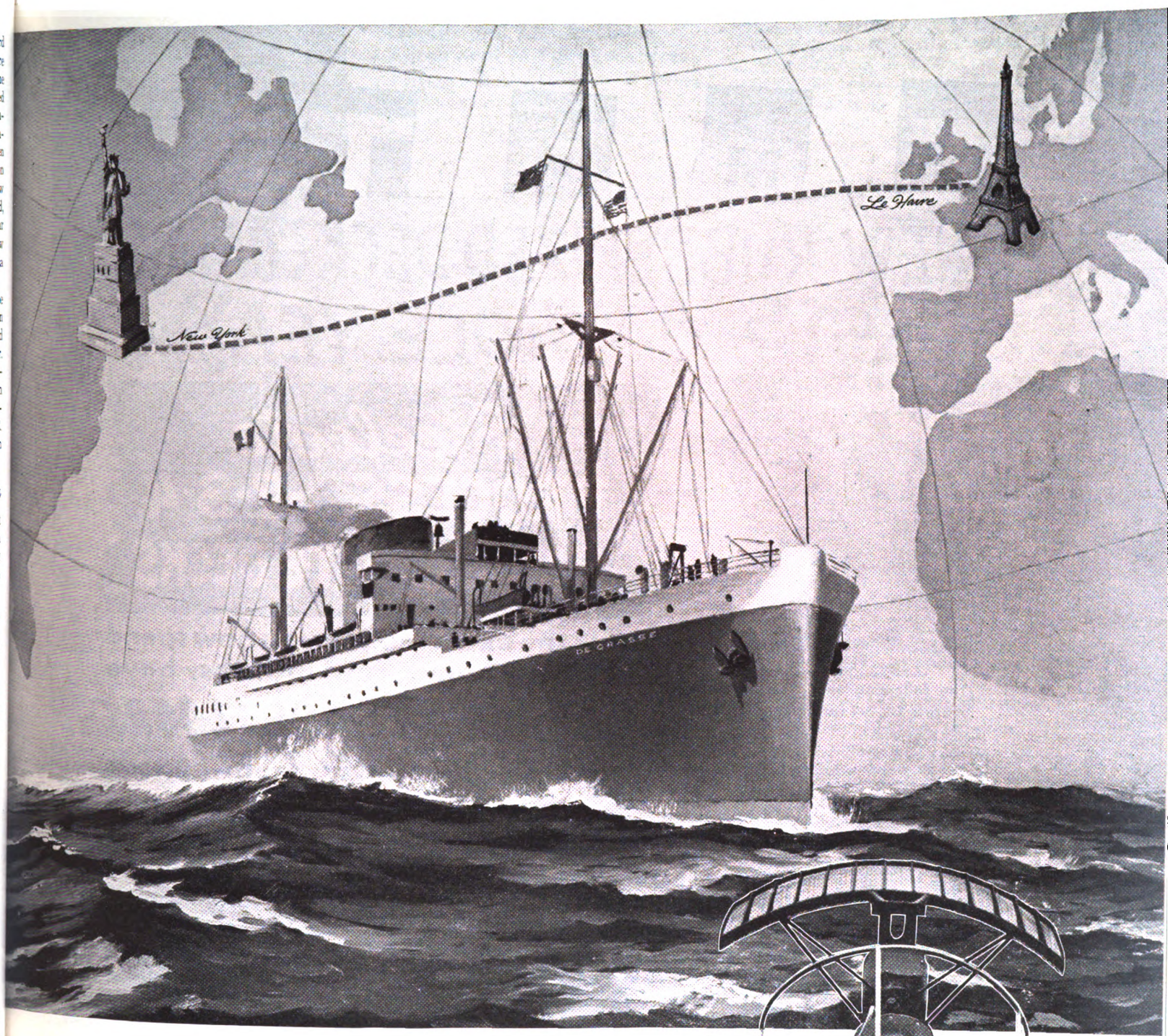
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SS PRESIDENT CLEVELAND, painted by Walter L. Greene, is presented to American President Lines' President, GEORGE KILLION by General Electric Company's West Coast Manager, ALLEN JONES. Left to right are: HUGH MACKENZIE, APL Vice President Passenger Traffic; CAPTAIN HOBART J. EHMAN, Master of the CLEVELAND; GEORGE CROW, Manager of GE's Marine Department; MR. JONES and MR. KILLION.

Correction

Someone slipped on a wet deck on the voyage of the January issue of The LOG from deadline time to date of publication and overboard, unfortunately, went some type from Page 14 identifying the three men in the bottom row of the Williams-Dimond-American-Hawaiian pictures. The missing names, left to right, are: Fred Ritchie, superintending engineer; Dick Streets, port engineer, and Harry Christenson, port steward.

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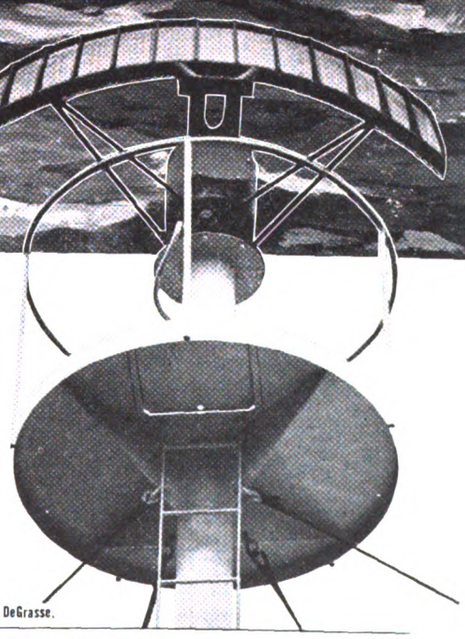
S. S. DeGrasse Maintains Schedules Despite Fog and Dirty Weather with MARINERS PATHFINDER* RADAR

Captain Estimates $3000-a-day Savings by Keeping on Schedule

Regardless of weather conditions, the S. S. DeGrasse of the French Line keeps on schedule with Mariners Pathfinder radar. Captain LeManchec states, "Since the installation of radar was made, the ship has never been delayed in entering Le Havre or New York harbor . . . recently 10 hours were saved entering Le Havre after going through fog-filled English Channel." Captain LeManchec estimates that a delay of one day sailing time costs approximately $3000.

Mariners Pathfinder radar will enable your ships to sail safely. It will help you save time and money by avoiding weather delays . . . protect your vessels, crew and cargo. Raytheon Mariners Pathfinder is available in two models . . . 10 cm for ocean ways, 3 cm for inland waterways. Sales and service offices, staffed by radar experts, are located in principal ports.

* Mariners Pathfinder is the trademark of the Raytheon Manufacturing Company denoting its commercial search radar.



Mariners Pathfinder Antenna mounted on the S. S. DeGrasse.

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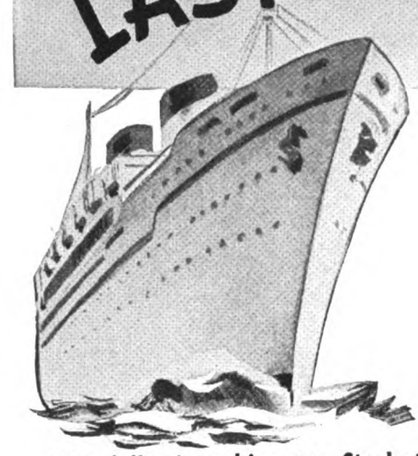
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Ship and Port Operations
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Lloyd's and ABS Abandon Agreement to Pool Resources

Abandonment is announced of a working agreement which was to have gone into effect last month by which Lloyd's Register of Shipping of Great Britain and the American Bureau of Shipping would have pooled resources. Generally, the plan was for Lloyd's to handle foreign representation of the American Bureau and the latter body to take over Lloyd's operations in the United States. The plan was dropped because of objections raised by private interests in Great Britain. Accordingly, the ABS will be represented in the world's principal ports by its own personnel.

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New Shipping Service Out of New Orleans

Additional shipping services through New Orleans were begun last month by the Strachan Shipping Company and the Texas Transport and Terminal Company, Inc.

The new schedule provides increased facilities for Gulf shippers to the Netherlands West Indies and Latin American ports. Additions to the new schedule include a ten-day Maracaibo service operated by the motor vessel PYGMALION and two other vessels. Ports of call include Curacao, Aruba, Maracaibo, lake ports and/or Paraguana, Amay Bay and Punta Cardon.

Four additional Strachan vessels are operating in a fortnightly Paramaribo service, calling at Puerto Cabello, La Guaira, Guanta, Trinidad and Paramaribo, with optional calls at Puerto Sucre, Pampatar, Carupano and Demerara.

All vessels load at New Orleans, Mobile and Houston and return to these ports with inward cargoes.

Texas Transport's new service is with its second converted baby flat top, the ss ALMDYK, formerly the British ship HUNTER. The ALMDYK left New Orleans last month on her maiden voyage bound for Antwerp and Rotterdam.

The ALMDYK is powered by an 8500-horsepower steam turbine engine and does 17½ knots. She is about 500 feet long and has a gross tonnage of 3179 tons. Master of the ALMDYK is Johannes P. Dekker.

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Weyerhaeuser Adds Two Ships To Intercoastal Service

Weyerhaeuser Line has purchased two Liberty ships for operation in its intercoastal services, according to L. J. Rogers, Pacific Coast manager of the line.

Purchased from the Maritime Commission at an approximate cost of $1,300,000 the two new units bring the Weyerhaeuser fleet up to a total of six ships and only two short of the prewar fleet size.

With sailings on a 14-day schedule the ships are scheduled to depart from Philadelphia, Chester, Baltimore and Norfolk in the Pacific Coast Direct Line service, westbound segment of the Weyerhaeuser Line and will discharge at Los Angeles, San Francisco Bay ports, Portland, Seattle and Tacoma. Eastbound the ships will follow the same itinerary.

Each of 10,000 deadweight tons the ships were built in the Maryland yard of the Bethlehem Shipbuilding Company and following the line's customary practice of naming its ships after Weyerhaeuser executives, the two ships have been named the W. H. PEABODY, who is executive vice president of the Weyerhaeuser Steamship Company, Newark, New Jersey and the late GEORGE S. LONG, former general manager of the Weyerhaeuser Timber Company at Tacoma.

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Bethlehem San Francisco Yard To Cut and Lengthen Tanker

T. C. Ingersoll, manager of the San Francisco Yard of Bethlehem Steel Company, Shipbuilding Division, has announced the company has been awarded a contract to cut an AOG type tanker in two, lengthen her by 30 feet to increase her barrel capacity and otherwise convert her to a commercial tanker for Tidewater Associated Oil Company. According to the company this represents the first job of its type to be performed in a West Coast yard since the war.

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Coastwise Line Inaugurates California-Alaska Service

Regular fortnightly service between California, Oregon and Alaska has been established by the Coastwise Line, San Francisco, with two Liberty ships, the ss JAMES W. CANNON and ss JOHN CROPPER. The vessels call at Long Beach, San Francisco, Portland and Seward. Expansion of the service is contemplated.

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Prudential Line Expands Traffic Department

The Prudential Steamship Corp., 17 State St., New York City, owners and operators of United States-flag steamship services, recently announced the expansion of their traffic department.

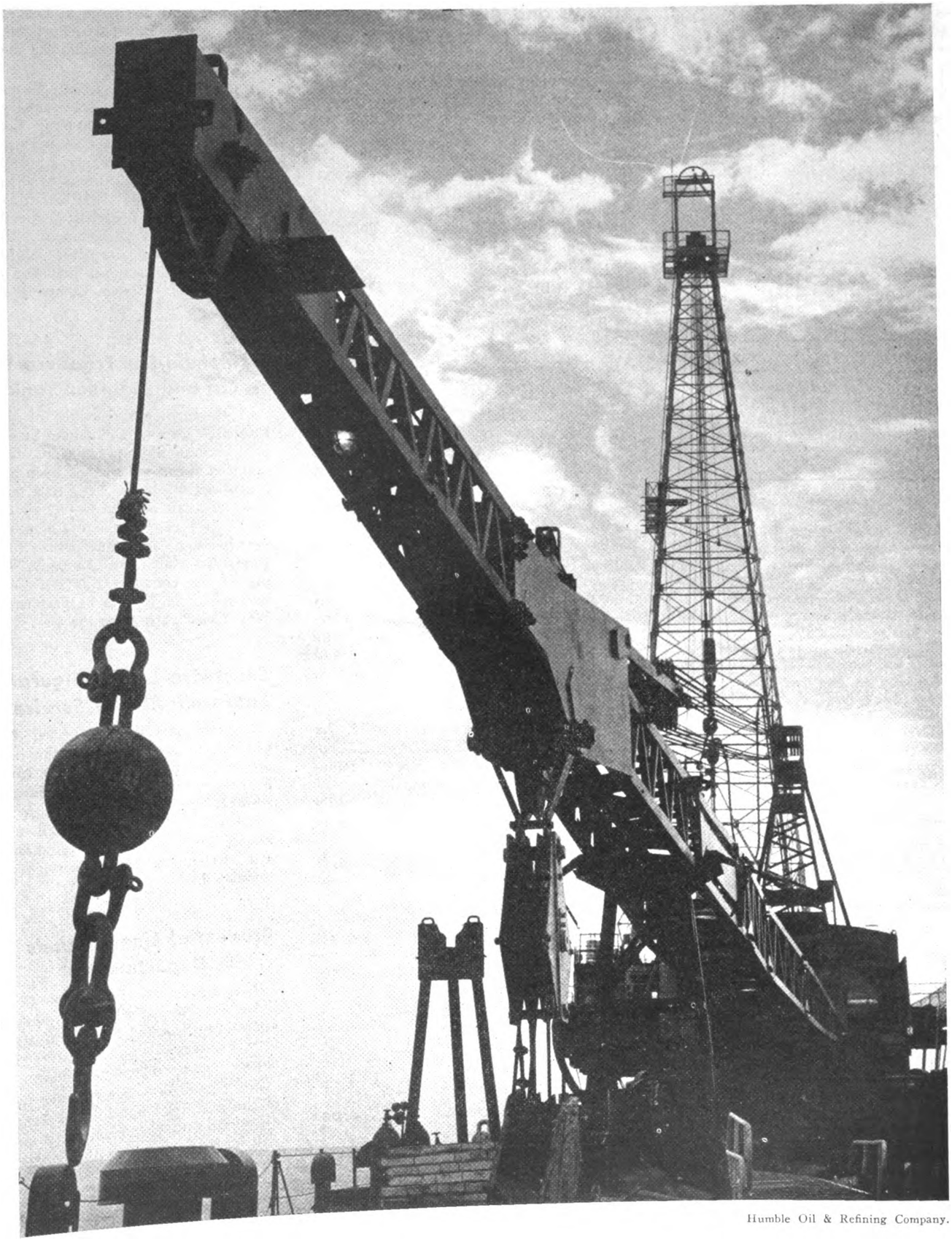
Mr. Stephen D. Stephanidis, president of the line, said that John E. Schmeltzer, Jr., who has been named a vice president will head the department. Christopher F. Solch has been appointed freight traffic manager, with George Keiller as his assistant. Mr. Schmeltzer has been serving as operating manager of the company.

The Prudential Line is operating 10 of its 12 ships between U. S. North Atlantic ports, Portugal, the Mediterranean and the Near East.

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Four Norwegian vessels were nominated for the new service of Barber Steamship Lines, Inc., from U.S. North Atlantic ports through the Caribbean range.

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Humble Oil & Refining Company.

BIG LIFT FOR AN LST . . .

(Story on Page 37)

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WHAT'S THE SCORE ON POSTWAR

JAP SHIPPING?

Are the Army and the State Department hatching another plot to scuttle the American-flag Merchant Marine? Here's evidence which indicates they are.

There is a very grave threat existing to the American-flag Merchant Marine—the revival of the Japanese and German fleets! This is not an alarmist statement by any means. Even while this article is being written conferences are going on at the State Department between the Military and State seeking to rebuild a sizeable German merchant fleet. Communications from the Supreme Commander of the Allied Powers (SCAP), General MacArthur, leave little doubt that he is using all his great influence to rebuild the Jap fleet to better than four-million tons!

The industry is fully aware of this threat, but unable to do anything about it except protest to the Army, which Frazer Bailey, president of the National Federation, has done several times. The reply has invariably been that no actions on this matter are being taken by the Army at present. This is not actually the case. No formal discussions are underway, but the Army, through SCAP, is right now rebuilding the Jap fleet, and planning to rebuild the German fleet!

The most recent indication of SCAP's plans was the announcement by the Japanese Foreign Trade Council, a civilian organization much like our own foreign trade associations, that they needed immediately 120 American Liberty ships. The Japanese explain that with this number of ships they could earn enough American dollars to reduce the costs of the U.S. occupation by around $147,000,000. Although this announcement was made by a civilian Japanese group, there can be no doubt that it had the full approval of SCAP. No civilian group in Japan today would dare make such a statement for world-wide consumption without MacArthur's prior approval.

Furthermore, there is a persistent rumor around Washington, although not as yet confirmed, that a representative of SCAP is right now conferring with the State Department looking toward the procurement of these ships from the Maritime Commission laid-up fleet. There is little doubt that the State Department will go along with MacArthur, since it is irrevocably in favor of building foreign merchant fleets at the expense of our own. For proof of this one has only to look at the mighty efforts the State Department expended in opposition to the fifty-fifty provisions of the ECA bill, and the recent statement of ECA Administrator Hoffman that he intended to abandon the policy of shipping fifty percent of the ECA cargoes in American bottoms.

Subsidized Competition

What would the transfer of 120 Liberty ships to the Japanese mean? It would mean precisely that the U.S. Government was subsidizing a foreign fleet, the merchant fleet of a defeated enemy, to compete with American ships! The U.S. Government would be subsidizing cheap labor to get the jobs of high-paid American sailors and shipbuilders! It would also mean that the U.S. Government was subsidizing a Japanese fleet to compete against our Allies! We would be giving our former enemies something which we took away from Britain and France! And yet, one way or another, that is precisely what the Army and the State Department will try to do!

As of the first of August, the Japanese *merchant* fleet aggregated 1,796,013 gross tons. This does not include their fishing and whaling fleets, but only merchant vessels over 100 gross tons. If we transferred to them 120 Liberty ships this would augment their present fleet by approximately 1,200,000 additional tons. They would then have a total merchant fleet of nearly 3,000,000 gross tons!

The significant thing about this 3,000,000 ton figure is the fact that Japan can not now utilize her one-and-a-half million tons in the carriage of her own trade! Right now her ships are in surplus to the trade routes which she is allowed to operate. This despite the fact that she is hauling oil from the Persian Gulf to the home islands, moving ore from the Philippines, and will soon be authorized to bring coal from India.

This can mean only one thing—Japan, with the help of SCAP and our State Department, is planning to operate these 120 Liberty ships in cross trades, offering cut-throat competition to the stabilized liner trades and producing a disastrous effect on world freight rates. That Japan could immediately enter these ships in competitive trades employing the cheapest available world labor is evident from the fact that on August 1, 1948, she had a surplus of 5,254 officers and 5,898 ratings on the standby payroll of the General Maritime Bureau. These men were over and above those currently employed on Japanese merchant vessels.

Evidence of SCAP Thinking

The Japs want to charter 120 Liberty ships and there is little doubt but that SCAP, which in the absence of any restrictions of higher authority to date has full control, is in favor of rebuilding the Jap fleet to at least the 4,000,000 gross tons recommended by the survey of Overseas Consultants, Inc.

Indication of the trend of the Army's thinking as far back as 1946 is contained in a radio message from the Joint Chiefs of Staff to MacArthur dated May 28, 1946. The radio read: "No facility should be made available for claim until such time as Japan's merchant fleet is restored to a level which in the judgment of SCAP is sufficient to meet the needs of the occupation."

SCAP's own thinking is all too evident in a letter which he sent to the Adjutant General which was titled, "Statement of United States Position with Respect to Control of the Economic War Potential of Japan." Briefly, MacArthur recommended:

1. Tonnage restrictions on the size of vessels be eliminated.
2. Ships presently in the Japanese fleet be retained and SCAP be authorized to acquire ships of the Liberty or Victory class according to his own judgment as to what was "essential to the Japanese economy."
3. MacArthur pointed out the proposed limitation of 3,000,000 gross tons of Jap shipping is only approximately 70% of the Jap fleet in the years 1930-34, and in his opinion the presently available economic data in no way indicates that 3,000,000 tons will be adequate to Japan's postwar economic needs.
4. MacArthur does not consider feasible the application to overall tonnage limitation on the Jap merchant fleet.
5. SCAP recommends that "economic control of Japan be centered basically around the production and availability of steel and petroleum products."

FEC Plans for a Jap Fleet

Final control of the size of the Japanese fleet depends upon the decision of the eleven-member Far Eastern Commission, comprised of the USSR, United Kingdom, United States, China, France, Netherlands, Canada, Australia, New Zealand, India, and the Philippine Commonwealth. However, since this group has not set any restrictions as yet, SCAP at the present time has full authority to go ahead on his own. The only interim

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TABLE I

Summary of Japanese Shipping Fleet

1 August 1948

Steel—100 Gross Tons and Over

	Vessels	Gross Tons	Deadweight Tons
Merchant Vessels	922	1,560,466	2,266,897
Fishing Fleet	303	65,900	.....
Whaling Fleet	46	57,756	.....
Miscellaneous Type	270	89,148	.....
Total Steel Fleet	1,571	1,773,250	.....

Wood—100 Gross Tons and Over

Merchant Vessels	1,491	235,547	349,309
Fishing Fleet	62	8,516	.....
Miscellaneous type	34	4,794	.....
Total Wood Fleet	1,587	248,857	.....

Total Japanese Fleet—100 Gross Tons and Over

Total Steel Fleet	1,571	1,773,250	.....
Total Wood Fleet	1,587	248,857	.....
Grand Total	3,158	2,022,107	.....

Total Merchant Fleet

Total Steel Merchant Fleet	922	1,560,446	2,266,897
Total Wood Merchant Fleet	1,491	235,547	349,303
Total Merchant Fleet	2,413	1,795,993	2,616,206

TABLE II

Status of Japanese Merchant Fleet

1 August 1948

Summary of Steel Fleet in Operation

	Vessels	Gross Tons	Deadweight Tons
Operable	623	1,013,775	1,461,430
Voyage Repairs	83	145,205	204,375
Major Repairs	104	184,678	269,350
Total Steel Merchant Fleet in Operation	810	1,343,658	1,935,155

Summary of Wooden Fleet in Operation

Operable	1,102	173,930	259,445
Voyage Repairs	69	11,200	17,121
Major Repairs	126	20,832	29,465
Total Wooden Merchant Fleet in Operation	1,297	205,962	306,031

Total Merchant Fleet in Operation

Steel Fleet	810	1,343,658	1,935,155
Wooden Fleet	1,297	205,962	306,031
Total Merchant Fleet in Operation	2,107	1,549,620	2,241,186

TABLE III

Summary of Japanese Fleet In Being But Not In Operation

1 August 1948

Steel Merchant Fleet

Status	Vessels	Gross Tons	Deadweight Tons
Laid Up	50	79,879	118,076
Salvage Operations	12	16,183	26,234
Salvable	21	65,684	99,455
Possibly Salvable	21	47,544	76,649
No Information	8	7,498	11,382
Total Steel Merchant Fleet	112	216,788	331,742

Wooden Merchant Fleet

Laid Up	23	3,883	5,527
Salvage Operations	1	268	350
Possibly Salvable	3	368	550
No Information	167	25,066	36,851
Total Wooden Merchant Fleet	194	29,585	43,278

Total Laid-Up Vessels

Laid up steel vessels	50	79,879	118,076
Laid up wooden vessels	23	3,883	5,527
Total Laid up Vessels	73	83,762	123,603

instructions which he has are implied from reparations levels. In April, 1947, the State War and Navy Coordinating Committee (SWNCC) established an interim level of 2,000,000 gross tons as the aggregate Jap merchant fleet exempt from reparations, except that regardless of the remaining size of the fleet all vessels over 6,000 gross tons and with a speed of 15 knots or better were to be made available. The only other limitation is an order of the FEC limiting ship construction to 150,000 gross tons annually.

While the Army is obviously plugging for a 4,000,000 ton fleet, the thinking of the FEC at present indicates a fleet of around 1,800,000 tons. The following excerpts from an FEC document (FEC SC 297/7) show the present trend of their considerations:

1. Removal of all shipyard facilities and equipment capable of constructing vessels exceeding 12-knot speed.

2. Capacity to service 3,000,000 gross tons of Japanese and foreign shipping be retained. (Note that the 3,000,000 tons *includes* the servicing of *foreign* vessels.)

3. Capacity to build 150,000 gross tons of new steel ships annually be retained.

4. Japanese should not be allowed to build ships measuring more than 3,000 light displacement or 6,000 gross tons or with a speed greater than 12 knots.

5. Japs should not be allowed to lay down more than 150,000 gross tons of new steel ships over 100 gross tons in any one year.

6. The aggregate fleet (both steel and wooden, including merchant marine, fishing, whaling and cannery fleets) should be reduced so as not to exceed 1,800,000 gross registered tons, of which not more than 150,000 tons should be tankers. This aggregate should include all vessels coming under the aforementioned definition whether they are operating, or are under repairs, or, if sunk, damaged, stranded or laid up, are, in the judgment of SCAP, economically salvable or repairable.

The above report, however, does not represent the thinking of a majority of the eleven nations comprising the FEC, since it was generally approved by only five nations, the other six nations reserving opinion. Nevertheless, it is the most concrete evidence available as to the terms in which the FEC, final authority on the Jap fleet, is thinking.

NFAS Objections to a 4,000,000 Ton Fleet

American shipowners, in their representations to the Army through the National Federation of American Shipping, have listed six reasons why the Japanese Merchant Marine should not be built up to 4,000,000 tons. These reasons, as expressed by Mr. Bailey in a letter to William H. Draper, Jr., Assistant Secretary of the Army, are as follows:

"1. We suggest that the peace of the world would best be served by a policy which restricts Japanese shipping primarily, if not exclusively, to the domestic Japanese trades and to service between Japan and nearby continental and island areas.

"2. That Japanese shipping net income as represented by its ratio to net national income, plays a small part in the overall Japanese economy, representing less than 1%. Therefore it is not an effective means of balancing Japanese finances or of raising living standards.

"3. We question the justification of raising Japanese participation in international shipping to a relatively higher level than is enjoyed by the United States, particularly when such stimulation of Japanese economic recovery must be at our expense.

"4. We question whether it is fair and just, at our expense, to improve the economic stability and living standards of our recent enemy to a point substantially superior to that of our recent allies in the same geographic area.

"5. Due to complete changes in government, physical conditions and psychology, the past achievements and statistical records of Japan are not reliable guides to future production, overseas commerce and finances of the nation. No one can foresee the future of Japanese industry as related to world trade. We suggest it would be incautious to provide Japan at this time with a merchant marine of a given capacity upon a purely conjectural theory that certain tonnages in imports and exports will develop. The general and gradual improvement of a cross-section of Japanese industry is a more logical approach and as has been shown will better provide the means of meeting any financial deficit.

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"6. Japanese shipping although built and operated by cheap labor has not been required by its government to compete upon a free trade basis in international commerce, but has been substantially subsidized. Japan has not followed the principle set down by the U.S. in the Merchant Marine Act of 1936 of making subsidy payments only in an amount which will offset the low wages and operating costs of competing foreign vessels thereby establishing a condition of economic parity in competition."

Recommendations of Overseas Consultants, Inc.

The objections voiced by the National Federation of American Shipping were directed primarily at the recommendations of the Overseas Consultants, Inc. which the Army seems to approve, although not as yet openly. The recommendations of this group follows:

"We believe that the amounts of shipping and of ship construction and repair capacity designated under SWNCC 236/43 are not large enough for a minimum balanced civilian economy in Japan. Our reasons for such belief are discussed below; because of the necessary interrelation of fleet size and shipyard capacity, our discussions concerning them have been combined in this chapter.

"Japan is a maritime nation which depends for her existence on water transportation and foreign trade. The loss of her colonies has not diminished her need for imported raw materials; on the contrary, their loss has accentuated the country's need for the conversion of raw materials and home labor into finished exportable goods.

"During the years 1930 to 1934, the average population of Japan was 65,700,000, according to official Japanese Government reports. During that period, her merchant fleet of steel ships larger than 100 gross tons averaged 4,170,000 gross tons, or approximately one gross ton for every 16 persons. Between 1934 and 1940, the gross tonnage was increased to about 6,000,000, which may be taken as an indication that the 1930 to 1934 fleet was not greatly in excess of peacetime needs.

"ESS estimated that the population in 1953 will be 85,800,000. Even if it is assumed that a modern fleet would be more efficient than the Japanese fleet of 1930 to 1934, it is reasonable to assume that a gross tonnage of about 4,000,000 or about one ton for every 22 persons, would be the minimum needed by 1953.

"The present Japanese merchant fleet has a gross tonnage of about 1,300,000 or one ton for every 60 persons; not only is it grossly inadequate in size, but it consists for the most part of sub-standard ships built during the war, and of prewar vessels with an average age of about 25 years. Many of these ships should be out of service within ten years. If it is assumed that one tenth of the present tonnage, or 130,000 tons, will be put out of service each year, there would remain 520,000 tons by the end of 1953. To build up the fleet to 4,000,000 tons would require purchase or construction of about 3,500,000 tons within six years.

Shipbuilding Requirements

"In view of Japan's desperate need for

TABLE IV

Japanese Ocean Going Vessels of 2,000 Gross Tons And Over

By Type And Size

October 1, 1930

Size (gross tons)	Freighters No.	Freighters Gross Tons	Combination No.	Combination Gross Tons	Tankers No.	Tankers Gross Tons	Total No.	Total Gross Tons
2,000— 3,000	101	245,341	23	55,037	1	2,417	125	302,795
3,000— 4,000	92	309,819	23	75,399	..	.....	115	385,218
4,000— 5,000	88	396,456	9	38,090	..	.....	97	434,546
5,000— 6,000	128	716,715	20	113,403	1	5,842	149	835,960
6,000— 8,000	68	466,487	20	136,108	10	70,854	98	673,449
8,000—10,000	5	41,280	20	185,962	2	17,723	27	244,965
10,000—15,000	..	.....	16	185,417	..	.....	16	185,417
15,000—20,000	..	.....	3	51,408	..	.....	3	51,408
Total.....	482	2,176,098	134	840,824	14	96,836	630	3,113,758

December 31, 1935

Size (gross tons)	Freighters No.	Freighters Gross Tons	Combination No.	Combination Gross Tons	Tankers No.	Tankers Gross Tons	Total No.	Total Gross Tons
2,000— 3,000	88	210,775	15	36,840	1	2,417	104	250,032
3,000— 4,000	89	296,779	19	61,711	..	.....	108	358,490
4,000— 5,000	79	356,551	10	42,403	..	.....	89	398,954
5,000— 6,000	128	718,226	11	60,787	..	.....	139	779,013
6,000— 8,000	86	588,499	15	103,355	12	86,201	113	778,055
8,000—10,000	12	100,264	21	194,366	4	37,634	37	332,264
10,000—15,000	..	.....	13	149,444	3	30,256	16	179,700
15,000—20,000	..	.....	3	51,448	..	.....	3	51,448
Total.....	482	2,271,094	107	700,354	20	156,508	609	3,127,956

December 31, 1940

Size (gross tons)	Freighters No.	Freighters Gross Tons	Combination No.	Combination Gross Tons	Tankers No.	Tankers Gross Tons	Total No.	Total Gross Tons
2,000— 3,000	135	332,482	26	67,132	1	2,417	162	402,031
3,000— 4,000	125	425,293	19	61,569	1	3,271	145	490,133
4,000— 5,000	122	548,562	12	51,148	..	.....	134	599,710
5,000— 6,000	156	865,737	14	75,998	3	16,515	173	958,250
6,000— 8,000	145	986,474	20	138,939	13	93,547	178	1,218,960
8,000—10,000	34	291,607	22	204,216	12	110,897	68	606,720
10,000—15,000	..	.....	14	160,437	14	141,775	28	302,212
15,000—20,000	..	.....	5	85,767	5	90,916	10	176,683
Total.....	717	3,450,155	132	845,206	49	459,338	898	4,754,699

TABLE V

Japanese Ocean Going Vessels of 2,000 Gross Tons And Over

By Speed Range

October 1, 1930

Speed (by knots)	Freighters No.	Freighters Gross Tons	Combination No.	Combination Gross Tons	Tankers No.	Tankers Gross Tons	Total No.	Total Gross Tons
Under 12	385	1,599,191	27	80,433	9	58,734	421	1,738,358
12	66	406,134	16	78,900	5	38,102	87	523,136
13	27	143,147	32	153,862	..	.....	59	297,009
14	..	.....	24	187,737	..	.....	24	187,737
15	4	27,626	17	133,795	..	.....	21	161,421
16	..	.....	10	110,687	..	.....	10	110,687
17	..	.....	4	50,973	..	.....	4	50,973
18	..	.....	2	33,910	..	.....	2	33,910
19	..	.....	..	.....	..	.....	..	.....
20 & over	..	.....	2	10,527	..	.....	2	10,527
Total.....	482	2,176,098	134	840,824	14	96,836	630	3,113,758

December 31, 1935

Speed (by knots)	Freighters No.	Freighters Gross Tons	Combination No.	Combination Gross Tons	Tankers No.	Tankers Gross Tons	Total No.	Total Gross Tons
Under 12	330	1,356,649	20	63,849	10	66,800	360	1,487,298
12	66	369,439	10	53,414	2	14,509	78	437,362
13	24	146,503	22	98,228	3	25,576	49	270,307
14	27	159,996	13	95,521	..	.....	40	255,517
15	11	62,484	18	138,517	..	.....	29	201,001
16	10	65,847	13	121,977	1	9,517	24	197,341
17	14	110,176	6	66,873	3	29,954	23	207,003
18	..	.....	..	.....	1	10,152	1	10,152
19	..	.....	3	51,448	..	.....	3	51,448
20 & over	..	.....	2	10,527	..	.....	2	10,527
Total.....	482	2,271,094	107	700,354	20	156,508	609	3,127,956

December 31, 1940

Speed (by knots)	Freighters No.	Freighters Gross Tons	Combination No.	Combination Gross Tons	Tankers No.	Tankers Gross Tons	Total No.	Total Gross Tons
Under 12	423	1,734,677	23	73,015	14	92,436	460	1,900,128
12	96	522,846	19	73,242	3	17,852	118	613,940
13	55	273,010	20	90,936	8	116,765	83	480,711
14	34	184,318	21	155,216	2	17,185	57	356,719
15	44	245,049	22	169,614	2	19,545	68	434,208
16	33	238,187	9	76,768	7	65,830	49	380,785
17	26	197,017	9	93,183	10	99,050	45	389,250
18	6	55,051	..	.....	1	9,974	7	65,025
19	..	.....	4	60,614	2	20,701	6	81,315
20 & over	..	.....	5	52,618	..	.....	5	52,618
Total.....	717	3,450,155	132	845,206	49	459,338	898	4,754,699

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TABLE VI

Japanese Steel Merchant Fleet In Gross Tons 1930-34

Year	Cargo	Semi-Cargo	Passenger	Tankers
1930..	2,539,277	826,575	87,001	101,500
1931..	2,553,419	900,358	121,674	95,873
1932..	2,581,788	901,042	121,447	123,753
1933..	2,477,421	914,413	124,992	124,297
1934..	2,452,596	856,895	124,144	124,297

	Average of the above:	Percentage of total steel merchant fleet:
Cargo.....	2,520,900 G.T.	.695%
Semi-cargo....	879,856 G.T.	.242%
Passenger.....	115,851 G.T.	.032%
Tankers.....	113,944 G.T.	.031%
Total.....	3,630,551 G.T.	100%

TABLE VII

Yearly New Construction

(Steel over 100 Gross Tons)

Calendar Year

	1946	1947	(first six months) 1948	Total
ESC Inventory...	156,240	38,776	95,734	290,750
SCAJAP Inventory.....	126,297	59,070	105,751	291,118

Yearly New Construction

(Wood Over 100 Gross Tons)

Inventory.....	17,050	18,600	11,910	47,560

New Construction On Ways

(15 August 1948)

Steel.....	93,750
Wood.....	85,580

foreign exchange, it will probably be impossible to purchase ships; it might be possible to charter ships for temporary service, but permanent needs must be met from home construction, using domestic materials to the maximum extent possible. Although the annual peacetime capacity of the Japanese shipbuilding industry is estimated at approximately 801,000 tons (see Section A, Shipbuilding Industry), a realistic survey of the general economic and industrial situation clearly indicates that it would be physically impossible for Japan to reach an annual output of 400,000 gross tons of new ship construction from Japanese materials, before 1954. Available shipyard capacity, however, could be employed to build merchant ships on foreign account using imported materials. The construction of 100,000 gross tons for foreign account would be equivalent to the export from Japan of about 80 million man hours of direct and indirect labor—a substantial contribution to Japanese economy.

"The following table shows the possible growth of Japanese merchant tonnage assuming (a) that all ships of the present merchant fleet of 1,300,000 tons are permitted to remain, (b) that sufficient shipyard capacity be retained to build approximately 400,000 gross tons of new ships per year, and (c) that the present fleet will be put out of service within ten years.

End of Year	Gross Tons Built	Tonnage put out of service	Net Gain	Fleet Size Gross Tons
1947.....	.....	.....	.....	1,300,000
1948.....	100,000	130,000	30,000*	1,270,000
1949.....	150,000	130,000	20,000	1,290,000
1950.....	200,000	130,000	70,000	1,360,000
1951.....	250,000	130,000	120,000	1,480,000
1952.....	300,000	130,000	170,000	1,650,000
1953.....	350,000	130,000	220,000	1,870,000
1954.....	400,000	130,000	270,000	2,140,000
1955.....	400,000	130,000	270,000	2,410,000
1956.....	400,000	130,000	270,000	2,680,000
1957.....	400,000	130,000	270,000	2,950,000
1958.....	400,000	.....	400,000	3,350,000
1959.....	400,000	.....	400,000	3,750,000
1960.....	400,000	.....	400,000	4,150,000

* Loss.

Fleet Vital to Balanced Economy

"We are of the opinion that, as a vital step in the re-establishment of a balanced economy, Japan should be permitted (a) to retain new ship construction capacity of 400,000 tons annually; (b) to build up her merchant fleet to a minimum aggregate tonnage of 4,000,000; (c) and to retain drydock capacity, large enough to service a minimum fleet of 4,000,000 gross tons. By formula (see Shipbuilding, Section A, of this report) this would call for a minimum capacity of 6,000,000 tons.

"We recommend, therefore, that:

(a) The shipyards numbered from 1 to 27, inclusive, on Exhibit 6.1, Shipbuilding Chapter, Section A of this report, be retained in Japan. (See Table XI).

(b) Due to lack of facilities on the Japan Sea coast, drydocks Nos. 1 and 2 at the Naval Dockyard, Maizuru, be retained with minimum equipment for repair work only.

(c) All naval dockyard buildings and repair facilities, except as noted in (b) be made available for reparations.

(d) Shipyards listed in Exhibit 6.1 numbered from 28 to 80, inclusive, be made available for reparations in the reverse order of their listing.

"The above recommendations are subject to the qualification that the shipyards and naval dockyards now performing work deemed essential to the occupation should be retained until such work is completed or transferred to yards not designated for reparations.

(e) No existing merchant ships be made available for claim. The present fleet already is far short of immediate requirements. Where necessary, speed of ships over 6,000 gross tons can be limited to less than 15 knots in turbine-propelled ships by removing boiler units, and in diesel-propelled vessels by removing cylinder units.

(f) Japan be permitted to make up as far as possible the present deficiency of her merchant fleet by charter or purchase of ships; the only ships available for this purpose would seem to be war-built vessels now laid up in the United States."

Sense or Nonsense?

The foregoing report of the Overseas Consultants, Inc. is premised on the report issued by the Far Eastern Commission on January 23, 1947, which determined that the peaceful needs of the Japanese people should be reestablished at the 1930-34 level, but that acceptance of this policy should in no way mean acceptance in advance of a specific level for any particular industry. The Japanese merchant marine in this period 1930-34 consisted of approximately 4,000,000 gross registered tons, with about 7,000,000 gross tons of unregistered vessels, primarily small craft, and some foreign tonnage under charter. The utilization of this fleet can be seen from Table XII.

In this 1930-34 period Japan had approximately 677,000 gross tons of shipping engaged in trade with the United States. During this same period she carried 65% of her foreign trade and approximately 93% of her near-seas imports; 100% of her Empire trade and approximately 73% of her trade with Asiatic Russia and China. And yet during this

(Continued on Page 64)

TABLE VIII

Composition Of Present Japanese Fleet June 1948

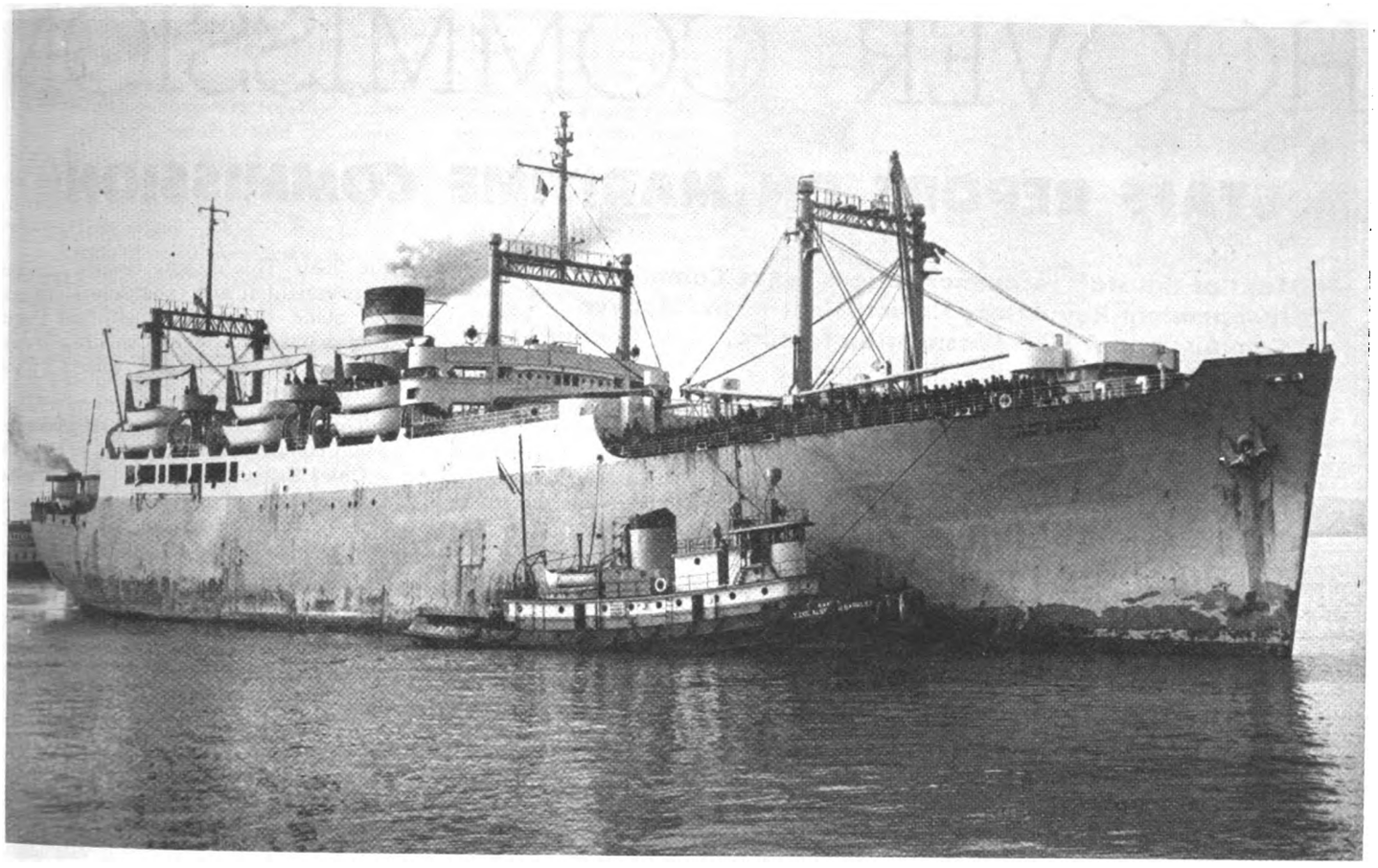
Type Vessel

Tonnage Range	Cargo (No.)	Cargo (G.T.)	Semi (No.)	Semi (G.T.)	Passenger (No.)	Passenger (G.T.)	Tankers (No.)	Tankers (G.T.)	Fishing (No.)	Fishing (G.T.)	Miscellaneous (No.)	Miscellaneous (G.T.)
100— 500	80	25,424	26	6,878	88	22,103	14	3,447	301	57,906	236	43,654
500— 1,000	303	255,062	17	12,147	11	7,362	55	44,683	19	12,994	41	27,821
1,000— 2,000	53	80,277	22	28,250	8	12,550	5	5,566	2	2,675	7	7,854
2,000— 4,000	99	247,102	10	27,207	5	17,997	11	30,785	1	2,980	5	13,949
4,000— 6,000	9	43,730	5	21,635	..	.....	1	5,175	..	.....	1	5,266
6,000— 8,000	63	431,242	1	6,526	2	14,160	1	7,268	..	.....	..	.....
8,000—10,000	5	48,149	3	27,035	..	.....	2	19,881	..	.....	..	.....
10,000—20,000	2	20,280	1	11,621	..	.....	8	83,217	2	21,228	..	.....
Totals.....	614	1,151,266	85	141,308	114	74,142	97	200,022	325	97,783	290	98,544

Total Steel Fleet

Cargo.....	614	1,151,266 G.T.
Semi-Cargo.....	85	141,308 G.T.
Passenger.....	114	74,142 G.T.
Tankers.....	97	200,022 G.T.
Total Merchant Fleet.....	910	1,566,738 G.T.
Fishing.....	325	97,783 G.T.
Miscellaneous.....	290	98,544 G.T.
Total Miscellaneous.....	615	196,544 G.T.
Grand Total.....	1,525	1,762,065 G.T.

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THE ARMY IS GOBBLING OUR MERCHANT MARINE

With a fleet of 286 cargo vessels and an annual lifting capacity of nearly 12,000,000 tons the Army is "up to its neck and even deeper" in commercial shipping.

"Army transportation is a subject so manifold and so complex that one could talk all day and still not thoroughly exhaust the subject."

So said Brigadier General Fenton S. Jacobs, Deputy Commander, San Francisco Port of Embarkation, recently. How right he was!

"The Army is in the transportation field—up to its neck and even deeper . . ." he continued in his speech to the California Chamber of Commerce on December 3, 1948. We wholeheartedly agree with this statement. But we add that it's time the Army got out!

"It's the Army's job to obtain its supplies at the factories of this nation and move them to an Army station within the United States or to a port of embarkation. . . .

"It's the Army's job to handle these supplies at the port and to load them on the ship. . . .

"It's the Army's job to administer, control and operate the ports of embarkation and the many other installations needed for efficient functioning of the ports. . . .

"It's the Army's job next to unload those supplies at an overseas port of embarkation and to move them by rail or truck to the fighting fronts in wartime and to the occupied areas and security garrisons in peace periods."

The above quotes are also those of General Jacobs. He went on to describe the Army Transportation Corps as "the world's largest single integrated transportation agency doing the world's biggest transportation job." We agree—but why?

According to General Jacobs, "In the 45 months of our participation in World War II the Army moved 33,678,000 passengers in organized groups of 40 or more, and 326,800,000 short tons of freight within the United States and transported 8,420,000 passengers and 138,110,000 measurement tons of cargo to more than 100 overseas ports."

We agree with the General that this was a remarkable achievement and give full credit to the Army for a magnificent job well done. But General Jacobs goes on to say: "The war has been over more than three years but the Transportation Corps is still engaged in a movement of men and supplies that surpasses anything before known in peacetime commercial or military transportation."

Which is precisely the point which we wish to make! Why should the Army be "engaged in a movement of men and supplies that surpasses anything before known in peacetime commercial or military transportation?" Movement of men —yes. Movement of supplies—no!

Here are some facts which General Jacobs did not give his audience! The Army is operating a total of 286 full-sized cargo ships! These ships have an annual lifting capacity of 11,790,000 tons if each only makes five turnarounds per year! The total lifting capacity of this fleet at one time amounts to 2,358,000 tons!

Exclusive of 10 strictly passenger vessels, the Army owns outright 57 passenger and cargo combination vessels each with a lift of approximately 6,000 tons. It owns outright 24 cargo ships with an approximate lift of 9,000 tons each. It

(Continued on Page 44)

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HOOVER COMMISSION

STAFF REPORT ON MARITIME COMMISSION

Text of the staff recommendations to the Committee on Independent Regulatory Commissions of the Hoover Commission. A LOG Washington feature.

The Maritime Commission faces two paramount needs. One is for a means of coordinating its operating, administrative, and promotional activities with the program of the rest of the government. The other need is for a single executive head whose authority would be stable and definite and not subject to curtailment by the Commission.

To meet these needs this report recommends that a Maritime Administration, headed by a Maritime Administrator, be established in an executive department and that the present operating, administrative, and promotional activities of the Maritime Commission be transferred to this new Administration, leaving only regulatory functions with the Maritime Commission.

As an alternative possibility, though a less promising one, this report recommends the strengthening of the chairmanship of the Commission by (a) making the chairman responsible to the President; and (b) vesting in him extensive control of the administration of the agency, and greater influence than at present over its policies.

These recommendations will be discussed in turn, followed by certain other proposals.

Advantages of a Maritime Administrator

Several advantages could be expected from the creation of a Maritime Administration headed by an Administrator:

Coordination

Since the President would have power to appoint and remove the Administrator, there would be direct responsibility to the Administration for the operating, promotional, and administrative activities of the agency. The Chief Executive would be able to coordinate these activities with the related operations of other departments.

Especially in the crucial areas of foreign policy and national defense, closely affected as they are by the administration of maritime affairs, greater harmony could be expected within the executive branch.

Responsibility

There would be unified responsibility where today there is divided responsibility. The President and the Administrator would be accountable to Congress and the people for the handling of maritime affairs. The present difficulty in pinning responsibility for maritime policy on the President, Congress, or individual Commissioners would give way to a larger measure of control by the electorate. A vital area of national policy would be made more subject to the control of representative institutions.

Congress would remain in ultimate command of maritime policy. But the nature of maritime affairs is such as to call for leaving considerable administrative and policy discretion in the hands of those carrying out legislative enactments. The administrators of maritime affairs should exercise that discretion in conformity with over-all public policy. This is where the President comes in.

Executive Head

The Maritime Administrator would, of course, serve as the executive head of the maritime establishment. Since the Commission would have no control over the operating, administrative, or promotional duties—which make up an overwhelming proportion of the present work-load—there would be no problem of insuring that it did not undermine the Administrator's authority. Unlike a General Manager reporting to the Commission, the Administrator would have full control of staff activities and the full opportunity for integrating staff and operating activities for the sake of efficient and well considered administration of maritime affairs.

Putting the Administrator in command of the agency (except for its regulatory functions as noted below) would have a distinct advantage over establishing a statutory Chief Executive or General Manager within the present Commission with authority in administrative operations alone.

This latter experiment was, in essence, tried in 1917 when the Emergency Fleet Corporation was set up under the Shipping Board. The general manager of the Emergency Fleet Corporation was in charge of shipping and shipyard operations, under the Board's supervision. Conflict and misunderstanding soon broke out between the chairman of the Board and the general manager; it was so serious that the President was forced to request both of them to resign.[1]

Several years later, in 1923, another dispute broke out. The Board accused the head of the Corporation of exceeding his authority and of refusing to obey directions; the latter replied that the Board was obstructing efficient management of the fleet. This dispute became a matter of presidential and congressional concern for some time. Eventually the Board, contrary to President Coolidge's wishes, decided to resume full control of the Corporation's affairs.[2]

This experience indicates that Congress could compel the Commission to live with a Chief Executive; it could not force the Commission to live with him harmoniously. Furthermore, as long as the Commission controlled policy, it would control administration as well; the two can hardly be divorced in practice. A chief executive, faced with a Commission divided on many issues or jealous of its prerogatives, would soon be hamstrung by efforts on the part of his subordinates to cultivate close relationships with individual Commissioners.

Disadvantages of a Maritime Administrator

The chief disadvantage in establishing a Maritime Administrator with broad powers is the loss of the quality of deliberation by top officials of diverse views which a commission has been able to bring to the administration of maritime affairs. Most Maritime Commission decisions, as noted above, have been made only after extensive discussion by several Commissioners with varied experiences and convictions.

Necessity of Deliberation

It is questionable, however, whether future maritime policy or administration would be seriously impaired if this deliberative quality did not continue in this form. The more important of the Commission's deliberations have been on matters of broad policy-making within the framework of maritime legislation. On many matters the Commission could act autonomously because of its independence from the President and because of the inability of Congress to direct it. Heavy obligations lay on the Commissioners to deliberate at length on the more important policies, because they frequently had few guide lines to direct them.

The Administrator would not face a problem of this magnitude. Assuming that he received a reasonable amount of direction from the President, his essential task would be to apply the policies of the Executive and legislative branches of the government to maritime affairs. He would not need the benefit of diverse views on broad policy to the same degree because his course would already have been set for him.

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[1] Cushman, *op. cit.*, pp. 241-242.
[2] *Ibid*, pp. 250 253.

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It is true, of course, that the Administrator would have to make interstitial policy within that laid down by Congress and the President. Such policy-making would require deliberative treatment. But to say that deliberation would be needed is not to say that the top officials must do the deliberating. This is a function that could be handled by the Administrator's staff which could bring to the consideration of problems the special contributions of planning officials, technicians, legal experts, economists, and others.

Indeed, in one respect such a staff would be far more qualified than a commission to exercise the deliberative function. Weighed down by operating and administrative functions, the Commission has never had the time it needed to concentrate on basic problems in broad perspective. One of the definitions of a good staff, on the other hand, is its freedom from routine activities and its chance to mull over matters of important policy.

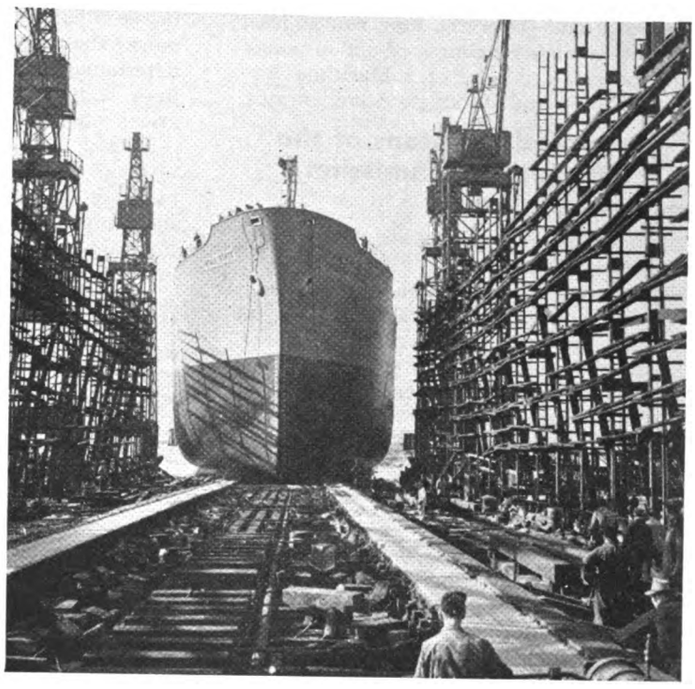
Lack of Continuity

A seeming disadvantage of granting broad powers to an Administrator is the likelihood of depriving the administration of maritime affairs of continuity of policy and administration. This continuity is expected of the commission form of control, under which Commissioners can serve overlapping terms. Yet this disadvantage, in the case of maritime policy, is more apparent than real.

In the first place, the Administrator could maintain continuity of policy on those matters which need not be influenced by over-all Administration policy. His staff and his operating officials should assist him in this respect. On matters relating to important national questions, however, continuity of policy is not the main desideratum. The chief need is responsibility to popular control; i.e., to the elected representatives of the people, Congress and the President. If popular sentiment favored some sort of new approach in the handling of maritime affairs, appropriate changes should be made in both personnel and policies.

In the second place, assured terms and continuity of policy have not been achieved at the Maritime Commission. Eighteen men have been members of the Commission in less than 12 years, even though the President has been of the same party throughout this period. Thus the average tenure of the Commissioners has been three years and four months. There have been three chairmen, and one acting chairman, during this 12-year period.

This turnover was also the case with the Shipping Board. During the 17-year period from 1917 to 1933, 31 different persons served as members of the Shipping Board (which varied in membership from three to seven); twelve members served less than one year, and only six served more than five years.[1] This record is rather ironical in view of the fact that one of the arguments originally advanced against *ex officio* membership for Cabinet officers on the Board was the need for stability and continuity of personnel.[2]



18,000-TON TANKER SLIDING DOWN THE WAYS . . . Fourth of 22 tankers in the Bethlehem-Sparrows Point Shipyard's shipbuilding program is the WORLD PEACE, launched six weeks ahead of schedule. To be chartered by Socony-Vacuum Oil Company and owned by Compania Internacional de Vapores Limitada, Panama, the vessel has an overall length of 551 feet, beam of 68 feet, cargo capacity of 152,208 barrels and designed speed of 14½ knots.

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Strong Chairman as Alternative

Many of the advantages of establishing a Maritime Administrator would apply also to institutionalizing the chairmanship of the Commission by vesting in it statutory control of administrative activities and predominance in policy-making. Under this arrangement, the Chairman would administer the agency through a Chief Executive or Manager who would carry out Commission directives as enunciated by the Chairman. Coordination with the rest of the executive branch could be achieved by making the Chairman responsible to the President for important policy.

An additional advantage of this course of action is that it would not upset existing arrangements to major degree. The President already has power to appoint the chairman of the Commission. The Commission itself would continue in control of maritime affairs. Such a move, in effect, would simply call for the reestablishment of the strong chairmanship that existed at the Maritime Commission during the first nine years of its life, except that the powers of the chairman presumably would be written into law.

Disadvantages

The chief drawback to this step would be the difficulty of drawing the line between the Chairman's powers and those of the Commission as a whole. Presumably in certain areas his authority would be final, subject only to presidential control; while in other areas the Commissioners would act with him by majority rule. However, in view of the importance of presidential direction and of coordination with other agencies in respect to a large portion of the agency's operating, administrative, and promotional activities, the responsibility that could properly be left in the hands of the whole Commission would be rather limited.

Doubtless it would be possible to grant the whole Commission control of the agency's extensive fiscal and accounting operations, but a major question would remain as to whether even these operations could not better be handled by a single executive head. Even the promotional functions of the agency, as noted above, are too closely connected with general Administration policy to risk being immune to presidential control.

The proposal for a strong chairmanship involves an inescapable paradox. The greater the powers of the chairman, the more superfluous become the other Commissioners and the more effectively and economically could their functions be handled by an able staff. The smaller the authority of the chairman, the more likely it would be that the old evils would appear—lack of coordination with the Executive Branch, divided responsibility within the Commission, and multi-headed control of administration.

The bi-partisan membership of the Commission might also create difficulties The Chairman would operate virtually as a subordinate of the President's, while at least two of the remaining Commissioners and at times perhaps a majority of the whole Commission, would not be members of the political party in power. Harmonious relations between the Chairman and the other Commissioners would be difficult under such circumstances. At best there would be divided responsibility within the agency; at worst there would be antagonism of the type that developed between the Shipping Board and the Fleet Corporation, with consequent disruption of policy-making and administration.

Given an exceedingly able Chairman and an eminently cooperative Commission, the establishment of a strong chairmanship might be successful, at least over the short run. A far safer, more straight-

[1] *The Use and Disposition of Ships and Shipyards, at the End of World War II, op. cit.*, p. 25.
[2] Cushman, *op. cit.*, p. 237.

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forward, and—over the long run at least—more promising course of action would be the establishment of a Maritime Administration under a single Administrator.

Proposed Functions of the Maritime Commission

Regulatory Activities

Under the recommended scheme for a Maritime Administrator in the executive department, the Maritime Commission would continue to exercise its present regulatory functions over rates, fares, charges, agreements, and practices in the maritime industry. A secretary, an office of trial examiners, and if necessary a counsel, would assist the Commission in these duties; they would be independent of the Maritime Administration except for "housekeeping" contacts.

In order to obtain some segregation of the essentially prosecuting functions from the adjudicative ones, it probably would be desirable to establish the present office of regulations under the Administrator. The Commission would pass on cases brought before it by the head of this office in behalf of the Administrator. In addition, where the Administrator refused to bring a proceeding, an aggrieved shipper or carrier might be allowed to appeal to the Commission from the Administrator.

Advisory Role

To leave the Maritime Commission only with adjudicative powers, however, would involve one major difficulty. The aim in separating adjudicative functions from quasi-legislative and administrative functions is to prevent the determination of individual cases involving private rights from being influenced by political considerations.

On the other hand, it is clear that many of the rules and regulations laid down by the Administrator in the maritime field will have so obvious and predictable an impact on private rights as to give him, in effect, considerable influence over the fortunes of individual concerns. This situation is most to be feared in the determination of routes and services and in granting of subsidies. Conceivably, the Maritime Administrator could make decisions respecting routes and subsidies knowing full well that a particular company with favorable political conditions would benefit thereby.

This problem is not unique in the maritime field, and it is one that has been coped with successfully by many governmental agencies whose administrative and financial actions closely affect private right. In a democracy the best guarantee of fairness on the part of public officials, aside from recourse to the courts, is the threat of disclosure and the force of public opinion. Since the Maritime Administration, however, would hold tremendous powers over the industry in an area which traditionally has been affected by a maze of pressures, it would seem wise to establish an additional safeguard.

Accordingly, it is recommended that the Maritime Commission be given formal advisory power in this "twilight zone" between legislation and adjudication. This power should extend to the review of the determination of routes, services, and lines and the control of carriers' operations under the subsidy program.

Thus if a carrier believed that the provisions established under the subsidy program unfairly discriminated against him, and that the administrators of the program had been influenced by improper motives, he could take his grievance to the Commission.

The Commission should have only the power to hear, investigate, and make a public report; it should not have power to change the action of the Administrator. Under the circumstances, the Commission's power of public disclosure should be enough to remedy the situation; to grant the Commission any greater power would be to interfere unduly with the proper authority of the Administrator.

Regional Representation

Should regional representation be a determining factor in the selection of Commission members? The main argument for an affirmative answer, as noted in Part Three, is that regional interests feel that through such representation they will be more likely to receive consideration in decisions involving the location of reserve fleet components, the establishment of facilities, the placing of contracts, the determination of subsidized services, and so on.

Since these matters would be determined by the Administrator under the recommended plan, there would be no reason for maintaining regional representation on the Commission. Even if the Commission should continue to exercise policy control of maritime affairs, regional representation is not recommended. It can easily lead to log-rolling on the one hand, or to divisions within the Commission, culminating in delay and deadlock, on the other. The maritime acts have as their objective the fulfillment of the national interests of the United States; the necessary national orientation of the Commission should not be diluted.

Location of Maritime Administration

The new maritime agency should be part of a department in the executive branch, in order that the President might not be burdened by the responsibility of directly supervising its operations.

If a Transportation Department is established to carry out the unified transportation policy endorsed by Congress and the President in 1940, the Maritime Administration should be made part of that department. In this fashion the administrators of maritime affairs could be brought into especially close contact with the administrators or regulators of other kinds of transportation. In view of the vital military responsibilities of the Maritime Administration, however, it should automatically be transferred to the Department of the Navy in time of war.

If a Department of Transportation is not established, the Maritime Administration in peacetime should be lodged in either the Department of Commerce or the Department of the Navy. The latter would probably be preferable even in peacetime because, while the maritime agency is promotional in many of its activities, the rationale for that promotional function is not commercial, but military. The main reason the American people subsidize a merchant fleet is not to develop our economy, but to insure the existence of naval and military auxiliaries in time of emergency.

On the other hand, a lessening of international tension in the long run might produce more emphasis on the economic aspects of promoting the merchant marine; in this case the Department of Commerce would be the natural home for the Maritime Administration.

Internal Management of the Maritime Commission

The defects in the organization and operation of the Maritime Commission have been discussed at length in the body of the report and provide part of the reason for the recommended Maritime Administrator. If that recommendation were adopted, the Maritime Commission would retain only limited functions and all internal organization appropriate to discharge them should not prove hard to devise.

If the Maritime Administration is not created, and the Commission retains its present functions, its internal organization is a major problem. But as has been seen, the Commission sought in its August 1948 reorganization to deal with that problem.

The draft of this report prepared before the reorganization of August 1948, had recommended a number of measures which should be adopted to improve the internal management of the Maritime Commission.

The proposals included the following steps:

(1) The establishment of an office of internal management embodying personnel, budget, administrative services, and similar functions;

(2) The re-grouping of bureaus and divisions for more efficient performance of allied functions;

(3) A reorganization of the staff handling policy matters, and especially the establishment of a planning group; and

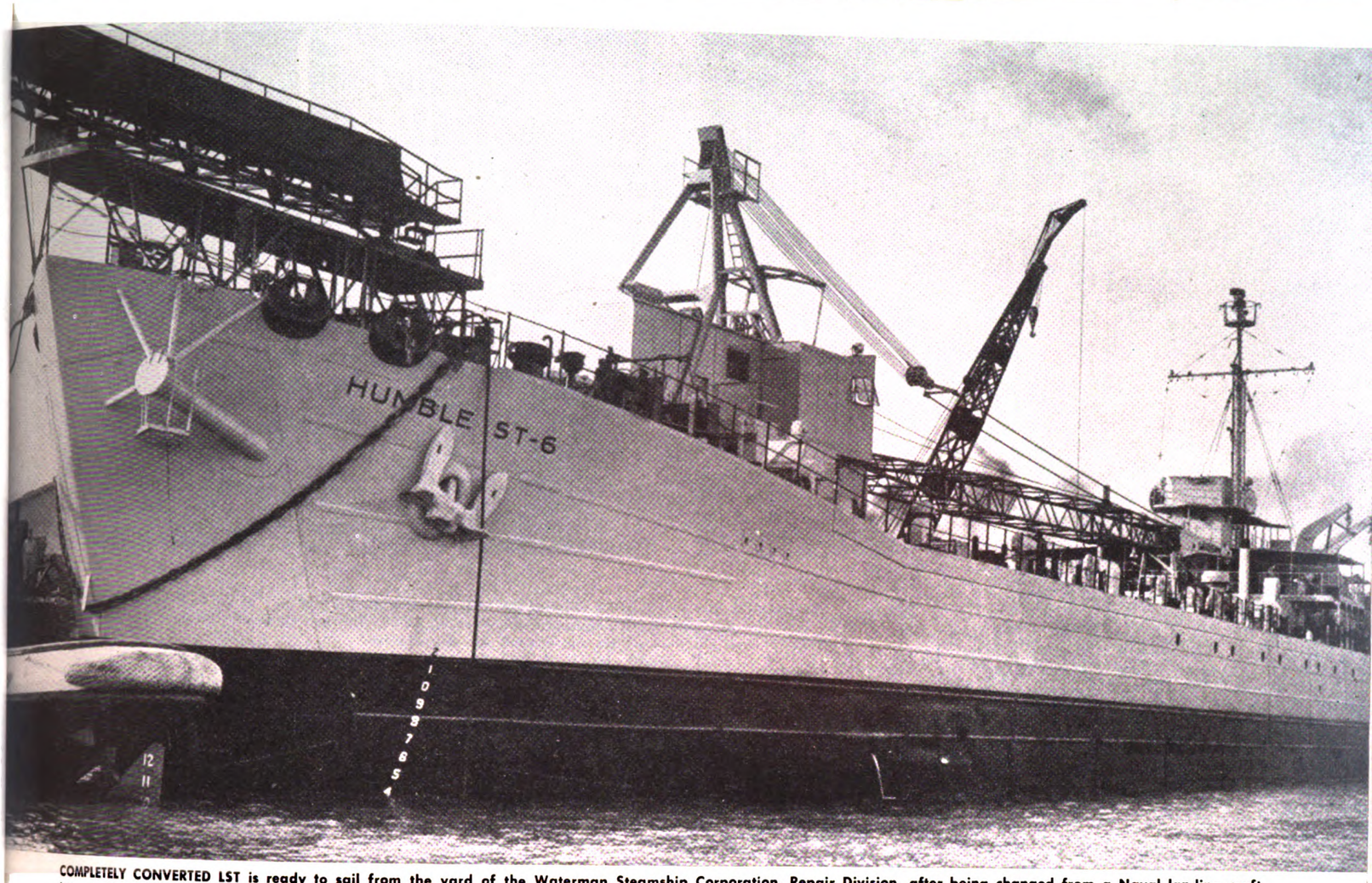
(4) The fixing of a detailed yet flexible set of policies in code form, to permit the delegation of ample responsibility to subordinates with the assurance that it would be exercised in conformity with the broad policies of the agency.

In its reorganization the Commission took the first three of these recommended steps. The fourth recommendation will probably be realized in due course, if only as a result of the adoption of the other three.

Detailed recommendations on internal management would therefore seem unnecessary at this time, in view of the evident willingness of the Commission to put its house in order. The critical question remains: will the Commission over the long run give the general manager the

(Continued on Page 66)

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COMPLETELY CONVERTED LST is ready to sail from the yard of the Waterman Steamship Corporation, Repair Division, after being changed from a Naval landing craft into an oil drilling tender for the Humble Oil & Refining Company.

LST's Go Back To Sea

DRILLING FOR BLACK GOLD

Gulf Coast yards are busy converting landing craft to oil drilling barges.

LST's have found many uses since the war, but probaby none which promises to be as profitable or extensive as the use to which well-heeled oil companies are putting them along the Texas and Louisiana coasts. Prior to the first drilling tender designed by the California Oil Company and built by the Levingston Shipbuilding Corporation in Orange, Texas, the principal use of the LST was for various types of car ferries and the Trailerships plying the Hudson River between Albany and New York.

Now, however, Gulf Coast shipyards are booming with business from the oil companies. Levingston and Avondale Marine Ways, Inc. of Westwego, Louisiana, especially, have practically gone into the oil business, while the Waterman Repair Division of the Waterman Steamship Corporation in Mobile, Alabama, has joined them with the recent conversion of three vessels for the Humble Oil and Refining Corporation.

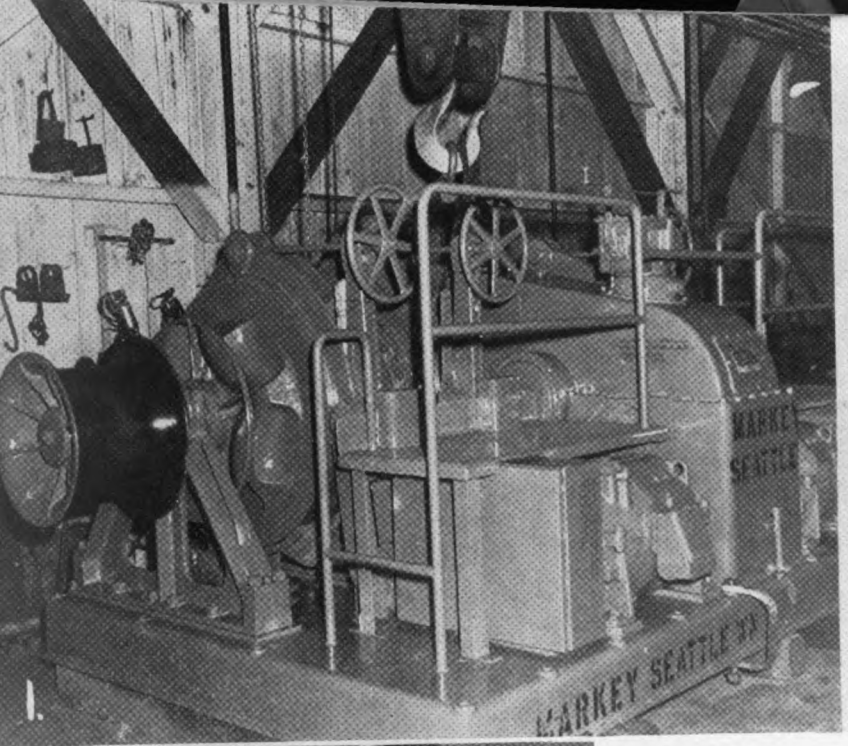
One of the most interesting features of these conversions to oil drilling tenders is the mooring arrangement. Because of the lusty weather prevailing in the Gulf of Mexico, and the suddenness with which the sunny skies can erupt into a heavy gale, the designers planned the mooring equipment to withstand wave-effects of gales up to 125 miles per hour. Six 10,000-lb. stockless anchors, eleven feet long and the largest ever made, are planted on the bottom and linked to the ship by 800 feet of 2-1/16 inch NACO chain.

Arrangement and equipment vary on the different tenders being constructed by the various oil companies, but on one now being converted by Levingston for the California Company, a subsidiary of Standard Oil of California, seven stockless anchors, each weighing 20,000 pounds, are being handled by two Markey windlasses. The forward windlass, weighing 48,750 pounds, has four wildcats, and the after windlass, weighing 45,000 pounds, has three wildcats. These Markey windlasses are driven by dual 50 h.p. motors and have special controls which permit each wildcat to operate independently.

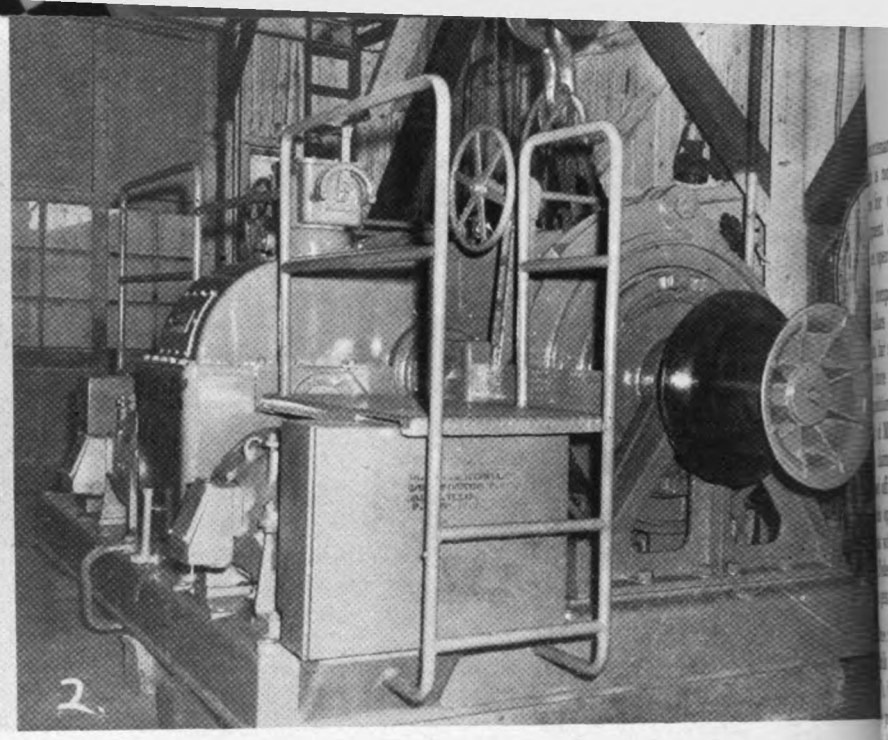
Mud pipes, fresh water hoses, catwalks and other supply lines connecting the converted LST to the oil drilling platform (see cut) make it imperative that there be no horizontal movement of the tender. Various methods were tried at first to overcome the effects of wind and current, but the final answer to date has been the special design of Markey and others which produced the multiple wildcat.

These converted LST's, which have an overall length of around 325 feet, a 50-foot beam, and a displacement of 5,650 tons, contain all the equipment needed for drilling a 15,000-foot well, exclusive of the actual drilling equipment which is built on a fixed platform sunk into the ocean floor. Some are self-propelled and others are not. Those which are self-propelled have the advantage of rapid mobility in case of severe storms, while they have the disadvantage of having to meet the Coast Guard requirements for ocean-going vessels. The majority of those constructed to date are non-self-propelled. These eliminate the expense

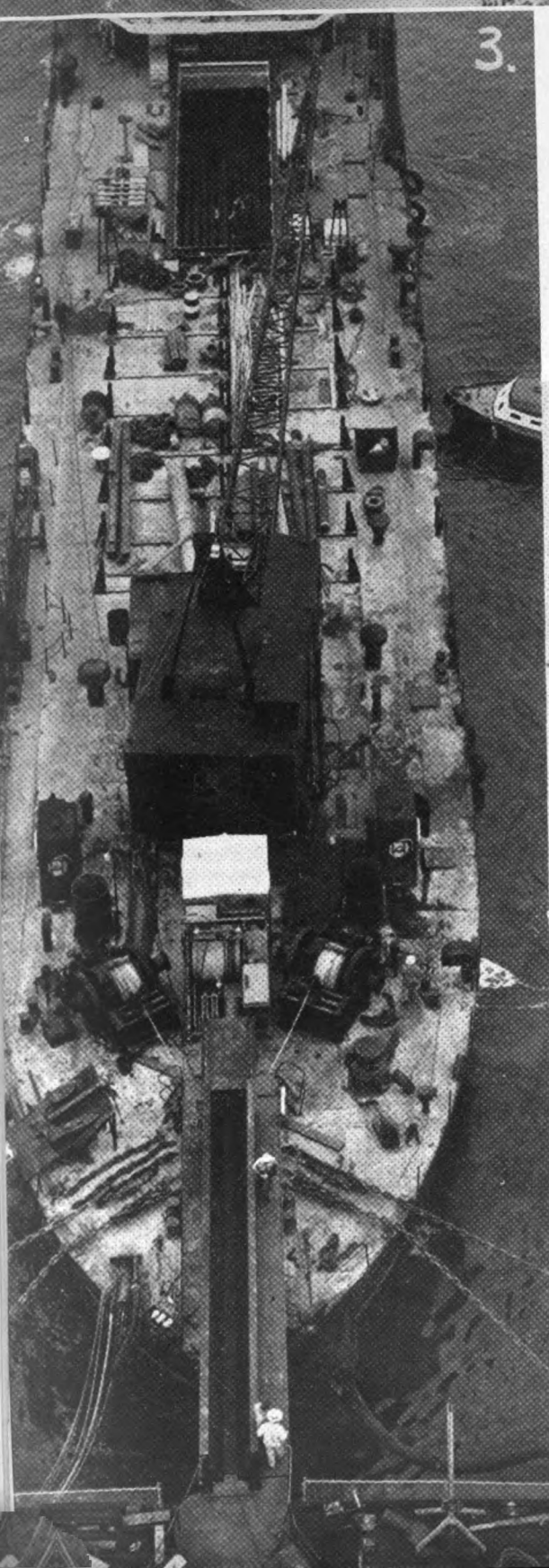
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1. STARBOARD view and 2. PORT VIEW of the after windlass aboard the S-21 of the California Company, designed by Markey Machinery Company, Seattle, Type WES-S-33. This unit equipped with three wildcats, weight 45,000 lbs. and has dual panels and controls for electric drive.

3.—LST oil drilling barge at work. This view shows the four forward mooring chains, the windlasses, the forty-ton crane, the open hatch for pipe stowage, and other deck arrangements as she is moored to the drilling platform.

4.—This is a lot of anchor for an LST, but the entire mooring arrangement is designed to withstand gales of hurricane force, and several have already had the dubious pleasure of being tested. These two shown here are 10,000 pounds each, measure eleven feet, and each anchor chain has a holding strength of 350,000 pounds.



4.

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of maintenance of propulsion machinery which is not often used, provide more space for crew quarters and drilling equipment and eliminate the necessity for an operating crew of seamen.

Oil companies have gambled millions of dollars on under-sea drilling operations, far more than was ever risked on any shore wildcatting operation, and the competition for leases has been keen. The Gulf of Mexico has now been sliced up into claims much the way Alaska was staked off during the Gold Rush, except in this operation the oil companies kick across with high rent to the states (to the Federal Government if Harry Truman gets his way).

Since no company can be sure where it drills it will strike oil, the converted LST's, though tremendously expensive, have proven to be the most economical method of drilling, since if a well does not come in, the LST with all its equipment is moved to another platform (these platforms do not come cheap).

Conversion of the LST's takes approximately three months. The bow is sealed up and the decks are cleared of their Navy equipment. The pilot house is converted into living quarters for the drilling crew and recreation space, offices and communications rooms are installed. A forty-ton crane with a 115-foot boom is installed on the forward deck to handle the loading of supplies and pipe aboard and to transfer pipe from the ship to the drilling platform. A platform about fifty-feet long and twenty-feet wide is constructed on the bow to facilitate the handling of pipe between ship and platform.

Two hatches, approximately fifty-feet by fifteen-feet are cut in the main deck to permit the stowage of pipe below decks. The crew quarters on most of these vessels consist of 18 two-man staterooms with tiled showers and lavatories.

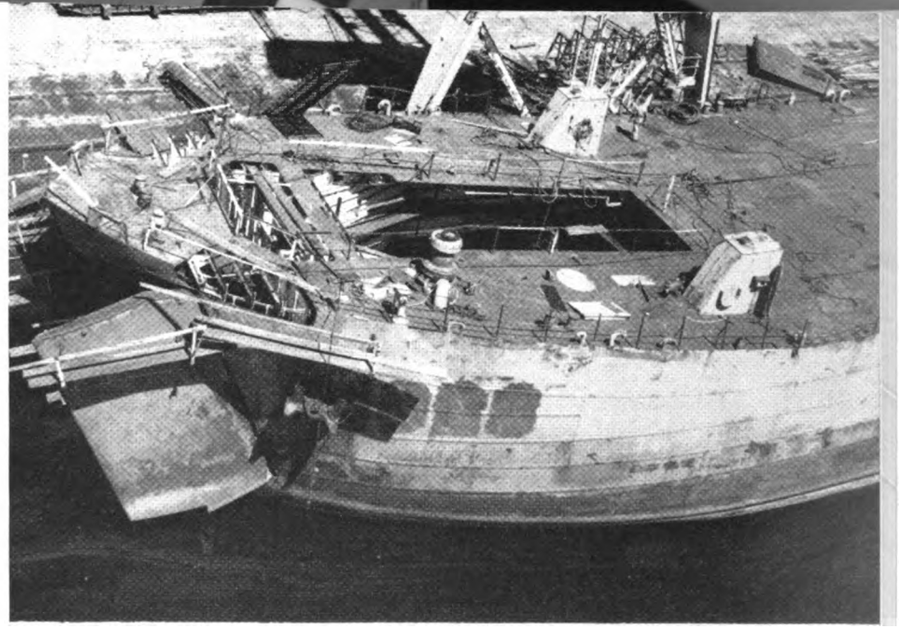
On the second deck the wing compartments are converted to stowage space for mud, chemicals and cement used in the drilling operations. The forward hold of the ship contains fresh water tanks for use in mixing the mud.

Generating equipment on the LST provides the power for lighting on both the ship and the drilling platform, and for operation of the electric motors operating mooring, lifting and mixing equipment. This generating equipment consists of three 100-kw. generators, each direct-driven by 150-hp. diesels.

The lines connecting to the platform, through which mud, fresh water, electricity, etc., are pumped, can be slipped in something less than half-an-hour so the LST can get underway and run for cover in the event of a sudden violent squall or any other emergency.

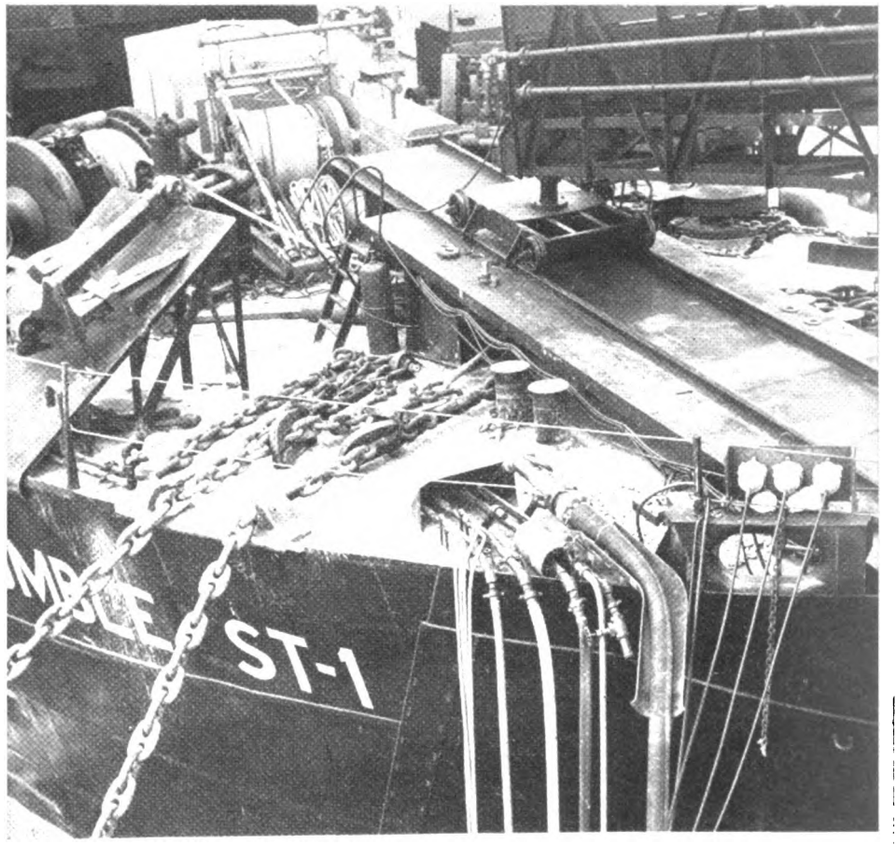
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Passenger traffic of the U. S. Lines in 1948 amounted to 102,061 persons on 568 outward and homeward voyages. The Transatlantic service accounted for 101,-685 on 497 sailings and the balance of 376 traveled across the Pacific in company ships.



PRIOR to conversion this is how the LST looked as she was berthed in the Chickasaw, Alabama yard of the Gulf Shipbuilding Corporation.

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THIS IS HOW the bow section looks after reconversion. The ST-1 was converted by Avondale Marine Ways, Inc., of Westwego, Louisiana, for Humble. The trolley running on tracks supports the catwalk from LST to the drilling platform, allowing for wave motion. Supply lines to platform lead out from under main deck.

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LIFEBLOOD of the drilling operation is pumped through the lines shown here as the LST is moored in position ready for operation. Six 10,000-lb. anchors hold this LST with 800-foot lengths of Baldt Dilok forged steel chain. One now being converted for the California Company will have seven 20,000-lb. anchors held by lengths of 2-1/16 inch NACO chain.

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ANNOUNCING... an entirely ne

featuring easier operation of



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rely new Loran

ation and readability

Now Sperry announces a new *direct-reading* Loran for shipboard use including all the desirable features of the Sperry Mark 1 Lorans in use on many vessels today . . . plus six distinct improvements that provide even simpler, speedier operation and improved readability.

SIGNALS AUTOMATICALLY POSITIONED

The addition of automatic frequency control eliminates drift and *holds* signals on the operating portions of the traces, thus greatly simplifying matching of pulses.

FASTER MATCHING OF SIGNALS

Signals can be matched in a fraction of the time required with other Lorans. One reason is . . . the coarse and fine delays are *continuous*. That is they do not operate in steps and never come up against a stop. Another reason is that these controls are *motor driven* . . . resulting in simpler, faster operation.

NO INTERFERENCE WITH NIGHT VISION

Use of "black light" (ultra-violet) lights up the time-difference meter and station selectors for quick and accurate reading in the dark without interference with night vision. Because the scope face is recessed, signals can be matched in a brightly lighted chart room.

FOR VESSELS WITH D-C POWER

An ON-OFF switch on Loran control panel automatically starts and stops dynamotor, or motor generator, required for ships having d-c power.

TILTABLE CONTROL PANEL

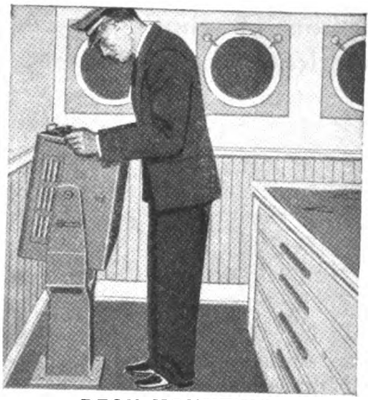
The receiver-indicator is well protected in a sturdy cast aluminum case mounted on trunnions which permit tilting the unit to any desired angle.

BACKED BY SPERRY SERVICE

The new Sperry Mark 2 Loran is backed by the Sperry world-wide service organization. Write Marine Department for information.

OPTIONAL MOUNTING

The new Mark 2 Loran, because of its compactness, trunnion mounting and separate power supply, permits four different mounting arrangements, depending on the space available in your vessel.



DECK MOUNTING



BULKHEAD MOUNTING



OVERHEAD MOUNTING

SPERRY GYROSCOPE COMPANY

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HOFFMAN OPENS SEA-COCKS ON U. S.

MERCHANT MARINE

ECA plans to scuttle fifty-fifty clause of Congress. Here's a factual statement of what's happening made by the Pacific American Steamship Association.

The Foreign Assistance Act of 1948, which became law April 3 of that year, provided that at least 50 percent of the ERP cargoes going abroad should be transported on American flag ships. The following is an excerpt from the Act with the 50-50 clause italicized:

Section 111 (a) The Administrator may, from time to time, furnish assistance to any participating country by providing for the performance of any of the functions set forth in paragraphs (1) through (5) of this subsection when he deems it to be in furtherance of the purposes of this title, and upon the terms and conditions set forth in this title and such additional terms and conditions consistent with the provisions of this title as he may determine to be necessary and proper.

(2) Processing, storing, transporting, and repairing any commodities, or performing any other services with respect to a participating country which he determines to be required for accomplishing the purposes of this title. *The Administrator shall, in providing for the procurement of commodities under authority of this title, take such steps as may be necessary to assure, so far as is practicable, that at least 50 percentum of the gross tonnage of commodities, procured within the United States out of funds made available under this title and transported abroad on ocean vessels, is so transported on United States flag vessels to the extent such vessels are available at market rates.*

(Public Law 472—80th Congress—Chap. 169, 2nd Session. S. 2202).

Fifty-fifty Clause in Operation

The Congressional "Watch Dog" Committee on Marshall Plan aid (official name: The Joint Congressional Committee on Foreign Economic Cooperation) made the following report which indicates the ECA officials have been carrying out the 50-50 policy of the Act. The staff report, which covers the period from April through September, 1948, shows that 51 percent of ERP commodities were carried abroad on American-owned ships. The report was based on the following figures:

Ocean Freight on U.S. Procurement as Reported by ECA Cumulated April Through September in Long Tons

	Bulk Cargoes*		Other Dry Cargoes	
	Tons	Percent	Tons	Percent
American Ships	2,610,196	53%	317,288	59%
Others	2,329,783	47%	231,780	41%
	4,939,783	100%	549,068	100%

	Oil		All Cargoes	
	Tons	Percent	Tons	Percent
American Ships	21,443	7%	2,948,917	51%
Others	269,799	93%	2,831,166	49%
	291,232	100%	5,780,083	100%

*Chiefly grain and coal (Long tons)

Abandonment of Clause Effective January 1, 1949

In a letter dated December 3 this year to Senator Styles Bridges, (R., N.H.) chairman of the Joint Congressional Committee on Foreign Economic Cooperation ("Watch Dog Committee") ECA Administrator Paul Hoffman served notice that effective January 1, 1949, he would no longer be bound by the 50-50 division of ERP cargoes on American and foreign ships unless American flag ships are available at "world-wide competitive tramp rates."

Hoffman asserted that in the near future U. S. flag ships may no longer be required to transport bulk cargoes (principally wheat, goal and oil). He asserted that there was a marked differential in the case of coal shipments to France in U. S. flag vessels as compared with foreign flag vessels, and to continue to provide transportation of bulk products at higher rates would be in the nature of a subsidy to the American Merchant Marine.

Hoffman explained that the ECA counsel had ruled that he was not bound to insist that 50 percent of ERP bulk cargoes be carried in American flag ships unless their rates meet "world-wide competitive tramp rates."

Pertinent excerpts from Mr. Hoffman's letter are as follows:

". . . there has been a marked change . . . with respect to the need for U. S. flag ships to carry bulk cargo since the passage of the . . . Act of 1948.

"In view of the necessity for moving (the) . . . cargoes, and . . . the shortage of available ships in the early months of ECA, it was absolutely necessary for U. S. flag ships to remain in operation . . . With the passage of time . . . this need has become less pressing and a . . . differential in rates has developed . . . as much as $4.50 per ton in . . . coal to France.

". . . the prospect is that in the near future there will be sufficient ships available at world market rates to transport ECA bulk cargoes.

"I am advised by the General Counsel of ECA that the provision (50-50 rule) . . . does not require me to insist that 50 percent of the ECA bulk cargoes be carried in U. S. flag ships unless such ships are available at world-wide competitive tramp rates.

"In view of the fact that in the near future U. S. flag ships may no longer be required to transport ECA bulk cargoes, it is my intention, not later than January 1, 1949 no longer to require that 50 percent . . . be carried in U.S. flag ships unless such ships are available at competitive rates.

"In conclusion, . . . so long as American ships are not needed, . . . any ruling by me that the 50-50 provision should be observed even though rates are higher for American ships would result in a subsidy to American shipping out of appropriations for European Recovery . . . I do not believe this was intended by the Act."

Legislative Intent

The action of ECA Director Hoffman in announcing planned abandonment of the rule, is interpreting the intent of Congress in the underscored portion of the excerpt from the Act set out below:

". . . The Administrator shall . . . take such steps as shall be necessary to assure, so far as is practicable, that at least 50 percentum of the gross tonnage of commodities, procured within the United States out of funds made available under this title and transported abroad on ocean vessels, is so transported on United States flag vessels *to the extent such vessels are available at market rates.*

American shipping and others supporting its stand opposing abandonment of the rule, contend that the words "market rates" mean the American market rate, i.e. the rates which could be quoted by American-flag operators.

ECA Director Hoffman, acting on the advice of General Counsel for ECA, has held that the words "market rates" mean "world wide competitive tramp rates." He so states in his letter. See 4th excerpt paragraph from his letter above.

California legislators were the House and Senate sponsors of the 50-50 clause. Their remarks, during consideration of the amendment, and after announcement of planned abandonment of the clause, are of interest.

While not "spelling out" of the mean-

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ing of "market rates," the words of Senator William F. Knowland, R., California, indicate his intent was to assure 50 percent to American ships.

Senator Knowland was upper House sponsor of the 50-50 amendment. His words on the floor of the Senate on March 8 were:

". . . It seems to me that the maritime industry and maritime labor should not be called upon to submit to an undue disadvantage under the Marshall Plan. Certainly we are not importing low-paid foreign labor and putting the workers at work producing in American plants in order to give a reduction in the price of the commodity. Those in the maritime industry, and particularly labor in the maritime industry, do not feel that they should be unnecessarily discriminated against in the program. The amendment provides that insofar as practicable at least 50 percent of the cargoes procured in the United States shall be shipped in American vessels, providing such vessels are available at market rates. I think there are ample safeguards in it to prevent the Government or the participating countries from having to pay an excessive rate on the shipments. . . ."

Congressman Willis R. Bradley, R., California, on the floor of the House, March 30, 1948.

"It has been the consistent policy of the Congress to protect American industries from cheap foreign competition. When the Congress considered a matter somewhat similar to this in 1934, it passed Public Law 17, which declared:

"'It is the sense of Congress that cargoes purchased with American Government loans will move 100 percent on American vessels.'

"I appreciate that the 'sense of Congress' is not a hard and fast requirement, but, nevertheless, I invite your attention to the fact that this declaration is still on the statute books. . . .

"If there is any one just criticism of this amendment (the 50-50 clause), it is that the 50 percent requirement is too small . . . It does not require that American vessels carry one half of *all* cargoes shipped out of the United States, although that would seem to be a fair request. It does not suggest that American vessels be given one half of cargoes purchased with our money for European relief, *wherever they may be obtained* although that also might be considered a fair request considering that American taxpayers foot the bills. . . .

"Please note carefully. This amendment requires only that American vessels shall carry one half of the gross tonnage of commodities *procured within the United States* . . . — to the extent that such vessels are available at market rates."

Mr. Bradley's remarks contain the phrase "at market rates" without details indicating whether it means American or world market rates. Nevertheless, throughout his remarks, he repeatedly indicates an understanding that the clause is a requirement, not conditioned on lower rates of cheap labor world tramps. This is indicated by his opening remarks about protecting American industry from such competition, and by his reference to the 1934 resolution indicating a sense of Congress that 100 percent of such cargoes should move in American bottoms.

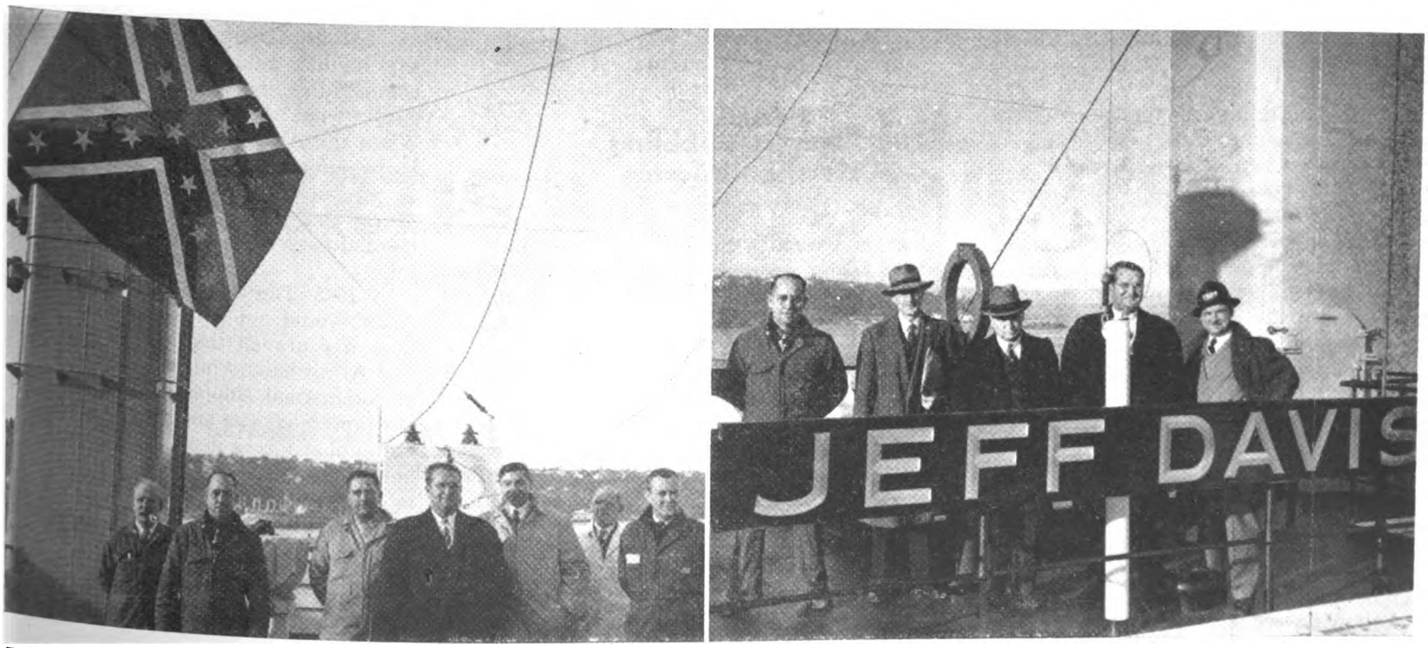
But any doubts as to Mr. Bradley's intent are completely removed by his public statement made on December 8, one day after the December 3 letter of Mr. Hoffman was released. Mr. Bradley said on December 8:

"As the author of the fifty percent carriage provision in the House of Representatives, I am greatly surprised to hear that the Administrator of ECA believes the words 'available at market rates' can be properly construed to mean such rates as are offered as 'world wide competitive tramp rates.' Such construction is surely far from the intent of the Congress as I understood it at the time of passage of the ECA Act and as I am convinced other members understood it. We knew exactly what we were doing and what we intended to do and we most certainly had no intention of subjecting American shipping to competition on even terms with the cheap-labor tramps of low-income nations of the world. On my part, I considered the U.S. Maritime Commission able and competent to fix ocean rates for bulk cargo and that such rates as fixed by the Commission are properly considered 'market rates.'

"I am surprised also to find that the Administrator objects to the payments of higher rates to American ships—apparently considering that the differential is a direct loss to the American people. Certainly this is not the case, as these higher rates keep many thousands of Americans in their jobs, keep their families off relief rolls, and con-

TODD SEATTLE SHIPYARD PRESENTS CONFEDERATE BATTLE EMBLEM TO ss JEFF DAVIS . . . At Seattle Todd Shipyards Corporation completed conversion of the ss JEFF DAVIS (ex-JOHN LAND) for the Waterman Steamship Corporation. A few weeks earlier similar work on the ss STONEWALL JACKSON (ex-HOTSPUR) was completed. In tribute to the Confederate officers after whom the ships are named yard officials have awarded a gift of the Confederate battle emblem to each of the ships.

Shown here is the emblem and the inspection staff of Waterman stationed on Puget Sound. Left to Right: E. E. WILKINSON, Hull Structural; D. C. AVENT, Electrical; J. G. O'PRY, Pipe, Insulation, Refrigeration; G. B. CLARKE, Chief Inspector; J. DLOUHY, Furniture, Rigging, Painting, Ventilation; A. H. TOWNSEND, Inventory and Allowance; CLARENCE WEST, Machinery; D. C. AVENT, Waterman; ROBERT MAHAN, United States Maritime Commission, Seattle; L. F. DEMING, Marine Engineer, Inspection Division, U. S. Maritime Commission, Washington, D. C.; G. B. CLARKE, Waterman; ARTHUR E. FARR, Assistant General Manager, Todd Shipyards Corporation, Seattle Division.



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tribute to the prosperity of this nation. Personally, when all angles are considered, I doubt if there is any loss to the people of the U. S. through these higher rates for American shipping. It seems to me to be a fundamental that we should give some reasonable consideration to the welfare of our own workers and that this shipping provision requiring a 50-50 break is one decent way to do it."

Certainly the language of the amendment and the remarks of its sponsors cast some doubt on the propriety of the proposed application of "world market tramp rates."

Therefore, a reasonable request seems to be one for delay in application of the Hoffman interpretation until Congress can convene and "give its own version of its intent."

This was expressed clearly by Captain John A. Cross, Secretary Treasurer, National Organization of Masters, Mates and Pilots, AFL, West Coast Local 90, in the following excerpt from his telegram of December 9 to President Truman and five Congressional Committees:

"WHAT IS UNDER CONSIDERATION IS AN INTERPRETATION OF CONGRESSIONAL INTENT BY AN ADMINISTRATIVE OFFICER OF THE U. S. GOVERNMENT. OUR MEMBERSHIP URGES THAT YOU USE YOUR OFFICES TO ASK FOR A SUFFICIENT DELAY IN THE NULLIFICATION OF THIS RULE UNTIL CONGRESS CAN CONVENE AND GIVE ITS OWN VERSION OF ITS INTENT."

Discrimination Against American Ships and Men

Hoffman's proposal, which would have the effect of virtually diverting all ERP bulk cargo from American to foreign ships, is discriminatory against American shipping and its workers—discrimination that none of the other industries concerned in the Marshall Plan have had to cope with. No criticism has been leveled at the coal industry or at farmers or at the railroads for charging for their commodities and services at standard American prices, which reflect American wage standards.

U. S. Maritime Commissioner Grenville Mellen summed up the feeling of the industry when he termed the reversal of the 50-50 plan a "sell-out" of the U. S. Merchant Fleet.

"If Mr. Hoffman is so interested in having shipping prices competitive, why does he not demand that American railroads charge the same rate for hauling Marshall Plan goods in this country as European railroads charge over there?

"In fact, why not—by the same line of thinking—reduce all U. S. prices to European levels?"

American shipping's case against the discriminatory nature of the Hoffman edict was stated by the National Federation of American Shipping on December 8.

Following are excerpts from the NFAS statement on that date:

"One hears no complaint concerning the ECA funds expended for wheat, the price of which is supported at a guaranteed level by the American taxpayer—nor the price paid for coal or freight charges to the American railroads at their full tariff, not on fifty percent but upon 100 percent.

"No suggestion has or should be made that these industries should accept less than fair remuneration at the American level, or that the element of cheap foreign labor should be taken into account."

National Economy Affected

The entire administration of the act is by its terms to give due consideration to the economic stability of the United States.

The preamble to the Act states:

"PROVIDED, That no assistance to the participating countries herein contemplated shall seriously impair the economic stability of the United States."

Yet, the withdrawal of these ships at this time would be a serious blow to the American Merchant Marine, which is essential to the economic stability and security of the United States.

Shipping is an international business and is dependent on world stability to prosper. An example of what instability can do to the shipping business is the Far East market, which due to civil war and inflation, has never opened up.

Shipping has not recovered from the war. Unlike other businesses, which operated under government contract but under their own management, shipping was completely taken over by the government during the war. Shipping returned to find operating costs up and rates inadequate to cover the added cost of doing business. The job of building up private shipping has been a slow one.

Assurance of hauling a fair share of ERP cargo has been a well deserved stop gap by which shipping has paid expenses while it sought to rebuild business and win back its customers. Hauling 50 percent of bulk cargo has until recently kept 300 ships in commission and has provided jobs for thousands of men.

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The Army is Gobbling Our Merchant Marine

(Continued from Page 33)

has on bareboat charter from the Maritime Commission 53 cargo ships each with an approximate lift of 9,000 tons. In addition it has 6 tankers which were not used in computing the tonnages.

The Army also has under time charter a total of 147 cargo ships averaging approximately 9,000 tons each carrying capacity. 120 of these are bareboated by the Maritime Commission to commercial companies and in turn time chartered to the Army. 106 are Liberties and the other 14 are Victories. There are also 27 privately owned ships on time charter to the Army of which 23 are Liberties, two are C-3's, one a Victory, and one a Hog Islander. This is the fleet which the Army controlled in foreign trade as of January 1, 1949!

The Navy is also in the shipping business. It is still operating 57 tankers—55 T-2's and two T-1's—in commercial type operation. Fifty of these were taken from the Maritime Commission laid-up fleet in the latter half of 1947. They are operated under a special Navy contract very similar to the General Agency Agreement of the Maritime Commission. And the Navy has no intentions of getting out! They are introducing into Congress enabling legislation which will clearly permit them to do what they have been doing right along, since the question of the Navy's legal right to enter into this type of agreement has been raised.

Perhaps the industry should petition Congress for the right to carry fifty percent of our own military cargoes in commercial American bottoms rather than try to keep fifty percent of the ECA cargoes—we might utilize more ships!

Quoting further from General Jacob's speech: "It has always been the policy of the Army to utilize the facilities of the civilian economy to the fullest extent possible in getting its job done.

"While the Army Transportation Corps today has the largest fleet of ocean-going troop and cargo vessels under one flag anywhere in the world—some 200 large ships and hundreds of auxiliary craft—more than 80 per cent of the Army cargo being carried to Asia, Africa and Europe to sustain our occupation troops and the civilians of occupied areas moves in the bottoms of commercially-owned steamships on space or time charters.

"While the Army has extensive rail equipment of all kinds, every ton of Army freight carried by rail in this country goes by commercial railroad, and with very few exceptions, every Army passenger traveling within this country is carried by commercial rail, bus or airlines. Army railroading is done strictly within Army bases or in overseas areas."

These two paragraphs are slightly deceptive. The Army does not "space or time charter" the railroad trains when it moves cargo within the USA. It pays the regular going freight rates for the commodities it ships. And that is precisely what they should do with ships. When the Army time charters a vessel it is the same as owning it for the duration of the contract. It is under complete Army control. It is no longer a commercial vessel but becomes an Army vessel.

In 1945 The LOG predicted that the Army would not get out of shipping and time has proven that prediction correct. The Army has no intention of getting out of commercial shipping, and it won't get out until Congress and the weight of public opinion forces it out. To the contrary, both the Army and Navy will continue to expand until they have gobbled up our commercial Merchant Marine. That's their objective and they are well on their way to winning it.

We say tell them to get out, and to get out now!

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PORT OF NEW ORLEANS

RENEWED CHALLENGE TO U. S. PORTS

New Orleans is a fighting port. Its businessmen are fighting men. Its enemies are many—without and within. And yet it continues to grow in business and revenue, and to lead the other U.S. ports by a wide margin in telling column-inches of editorial copy in national magazines and newspapers.

Eight years ago the city's leading businessmen wrested from corrupt politicians control of the state dock facilities. It was a classic fight which they won through grim determination. They launched a program more daring in concept than was generally credible. Dollars and cents which for a generation had been bled off into the pockets of politicians were turned into profit for the community. World-famous International House became a reality which stands today as one of the greatest public relations efforts ever attained.

A foreign trade zone was established and began doing business with the world. An international trade mart was conceived, organized and constructed. All this was accomplished against odds which would have overwhelmed all but these most visionary of men, who meanwhile conducted one of the most remarkable selling jobs ever undertaken by a group of united civic and business interests.

Alarm ran rampant through competitive ports to the North and West as trade began to swing southward down the Mississippi Valley, funnelling through the new Port of New Orleans. The threat offered by this once-sleepy port of the Deep South could no longer be laughed off. And then a general sigh of relief swept around the country's coastline. The Port of New Orleans was fighting for its life against odds so completely overwhelming it was already eliminated in the minds of many as a serious contender for the trade it had promoted.

Last year the proteges of political baron Huey P. Long, who managed to perpetuate his dynasty even after death, were swept into state office by an overwhelming majority. Earl Long, Huey's brother, took over the governor's seat and set out with open determination to wreck the economy of New Orleans, still in control of his sworn enemy Mayor deLesseps Story Morrison.

When Morrison and Sam Jones took over the government of Louisiana, their first move was to take the Port of New Orleans out of politics, place it in the hands of businessmen, and put the employees in state civil service. To change what these men had done required an amendment to the state constitution, which Earl Long proposed as soon as he took office. The measure swept through the Legislature with an ease comparable to the politboro, and the referendum held November 2, 1948, was considered about as serious as a Russian election. Defeat of Long's proposal was given the same chance Harry Truman was given to win the presidency. Nearly everyone gave up the fight.

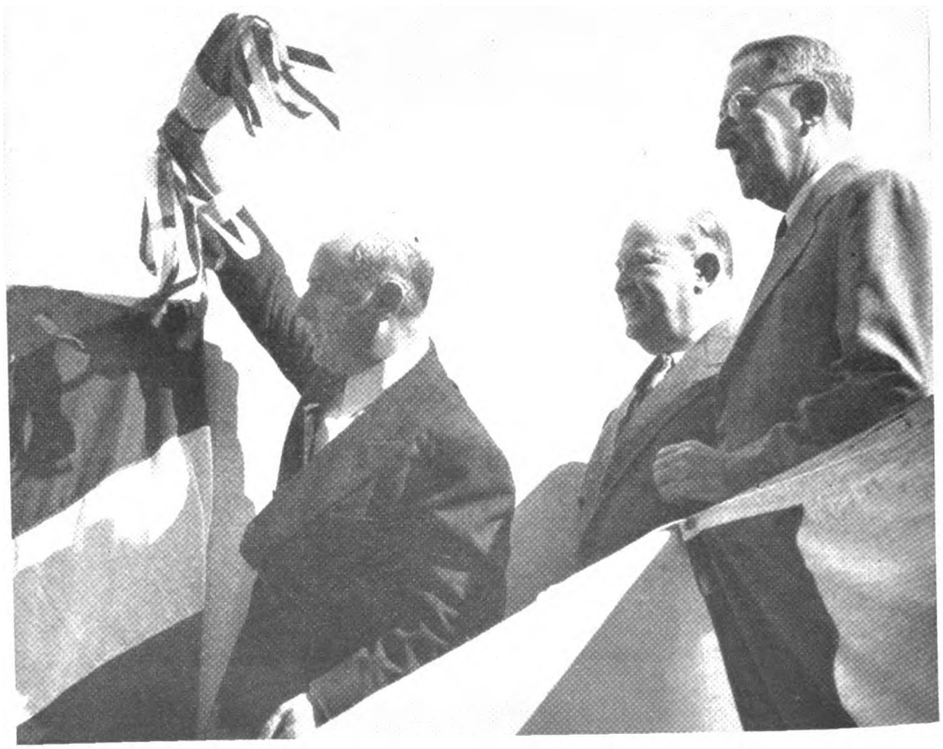
But those who had already discounted the Port of New Orleans found themselves in a class with Elmo Roper and Dr. Gallup. They failed to reckon with men like cattle-breeder and New Orleans attorney Lloyd J. Cobb, who organized and headed the Louisiana committee to save the Port of New Orleans. This committee was organized three weeks before the general election and set out to raise $50,000 to spend on radio and newspaper appeals to the people and on traveling in connection with speeches. Such organizations as the Rotary, Lions, Kiwanis, and other civic clubs, the Association of Commerce, International House and other organizations pitched into the battle on the basis of a civic issue affecting the future welfare of the state, rather than as a political measure.

Despite the fact that only half the amount was raised, the committee's battle-cry—"Kill Amendment No. 3 on November 2"—pealed out over the airwaves and appeared in full-page ads in every newspaper in the state. Harping on the statistical fact that the port had been a financial burden under the Long regime, while it had grown tremendously and produced great profits under its business-supervised operation (the dollar value of foreign trade has increased 500 percent over 1939, last year of Long control), the businessmen's committee defeated the "power grab" by an overwhelming majority.

With their own house once again in good political order, the Port of New Orleans set out to answer the frantic crys of the Atlantic port-coalition which attacked it last summer—but their answer was in a typically New Orleans manner. There would be a dedication ceremony for the new International Trade Mart which would tell the world where New Orleans was headed.

Newspapermen, managing editors,

FROM THE HEART OF THE HEARTLAND, Mayor Aloys P. Kaufman of St. Louis dedicates the new International Trade Mart. The bottle is not filled with champagne, but with water taken from the six principal tributaries of the Mississippi and flown to New Orleans. Watching him are Herbert Schwartz, Vice President, and Theodore Brent, President of the Trade Mart.



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FOR BETTERMENT OF INTER-AMERICAN RELATIONS, Theodore Brent, president of the Mississippi Shipping Company, and president of the International Trade Mart, receives the silver trophy of the Thomas F. Cunningham Award. Mr. Brent is one of the founding fathers of modern international New Orleans.

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magazine editors, and columnists were flown in from competitive port cities and the midwest jousting arena as guests of the city. Diplomats representing the nations of the world were brought to town and established in the best hotels. Receptions, banquets, and ceremonies honoring the founding fathers of modern international New Orleans produced reams of copy in the nation's press. And to climax the festivities, the new five-story International Trade Mart was dedicated by the Hon. Aloys P. Kaufman, Mayor of St. Louis, from the very heart of heartland America where competitive ports meet in battle, by smashing a bottle of water taken from the six principal rivers flowing into the Mississippi.

Nor did internationally-minded New Orleans overlook the fact that the Trade Mart and the port were a two-way proposition. With the cooperation of Pan American Airways, the visiting newspaper editors were flown to Merida, Yucatan, Mexico, which exports fifty percent of its entire sisal output to New Orleans, where they were the guests of that city.

Can anyone reasonably question why New Orleans has risen like a rocket? No other port has yet dared even follow her example. The daring plan of international public relations conceived in the minds of a few businessmen five years ago is reaping rich benefits for the port. But the risk involved was something no one else has yet seen fit to venture. What happened to New York's daring plan for rehabilitation? Financially sound, and yet there was not the courage to carry it through!

Instead of commiserating with each other over New Orleans' effective trade promotion ideas, other ports would do well to admit that the Crescent City stole a march on them, and take a lesson from her success. But before they start out they should take cognizance of one key factor in New Orleans' startling success. It had its well-springs deep in the community, and the fountain sprang from a spirit of cooperation and determination which can not be purchased with cold cash.

However, the Dedication of the International Trade Mart is just another step in the ambitious plans which New Orleans has in progress. A new route to the Gulf of Mexico is on the docket for Congressional appropriation with the recommendation of the Army Engineers. And Argentine and Uruguay are dickering for the construction of a wool processing plant and a refrigerating plant in the New Orleans Foreign Trade Zone. New Orleans has no idea of sitting back and letting other ports overtake her.

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Lake Carriers' Association yesterday took an official position which neither opposes nor favors the St. Lawrence Navigation & Power Project "with respect to its broad economic aspects."

The announcement came following a meeting of the Association's Board of Directors in a statement issued by John T. Hutchinson, President.

"The Board's action was taken because of the divergent views expressed by the Association's members," said Mr. Hutchinson. "For many years the Association has actively opposed construction of the St. Lawrence project and many of our member companies are still in opposition. However, within recent weeks other member companies have expressed themselves in favor of it. Accordingly, we are adopting a position neither opposing nor favoring the St. Lawrence Seaway and Power Project with respect to its broad economic aspects. The Association, however, will continue to assert an interest in the technical phases of the navigation facilities."

Lake Carriers' Association, with twenty-six fleets in its membership, represents 95% of the carriers of U.S. registry engaged in the transportation of dry bulk cargo on the Great Lakes.

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Award of a $1,250,000 contract to convert two troopers to civilian class for Luckenbach Steamship Company has been made by the Maritime Commission to Todd Shipyards Corporation.

BELGIAN EXHIBIT, first of the foreign exhibits at the International Trade Mart, is opened by Baron Robert Silvercruys, Belgian Ambassador to the United States, while Clay Shaw, Manager of the Mart (left), and New Orleans' internationally famous Mayor "Chep" Morrison (right) assist.



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...since the white ships came...



Starting half a century ago to sail to Caribbean ports for tropical fruits, the ships of the Great White Fleet began to serve the mutually beneficial trade between Middle and North America.



To coordinate cargo movements efficiently the United Fruit Company pioneered the first ship-to-shore radio in the Caribbean—known today as Tropical Radio Telegraph Company and offering a public service between the Americas.



Passenger traffic as well as cargoes steadily increased—citizens of Middle and North America both, learning to know each other better.



Today, such new crops as abaca (manila hemp), African palm oil and certain hard woods are progressing favorably, along with the traditional nutritious foods of Middle America—bananas, cocoa, coffee, sugar—and form part of the cargoes continually moving north, while—southbound—the Great White Fleet carries the products of northern farms and factories.

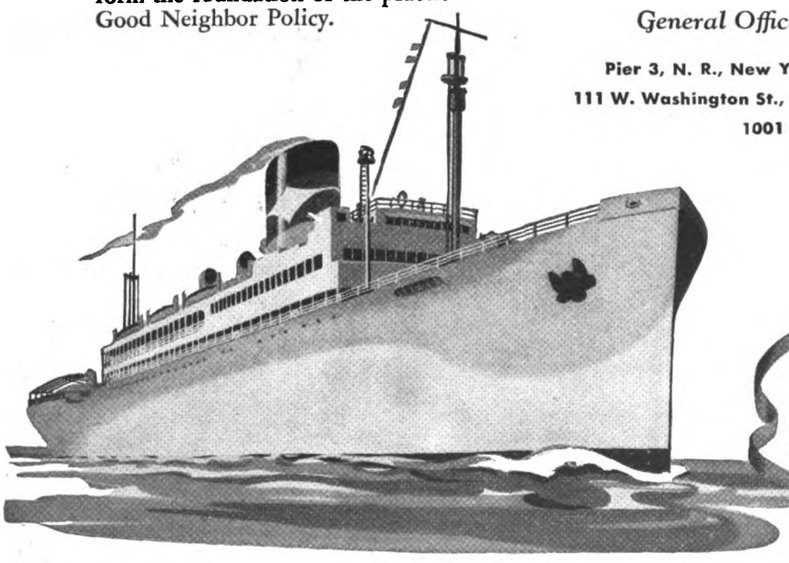
Harbinger of all this was the first white ship that sailed so long ago . . . and of much more, too . . . of the growing understanding and friendship between the Americas. The day by day contacts of thousands of individuals form the foundation of the practical Good Neighbor Policy.

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CIO BLUEPRINT FOR A U.S. FLAG FLEET

Decline of foreign trade, mismanagement, and bungling of the Administration and Congress are responsible for the present plight of our Merchant Marine.

This article was prepared and written exclusively for The LOG. However, inadvertently, the article has appeared in a union newspaper prior to publication here. Since the CIO Maritime Committee's views on projected legislation are of paramount importance to the industry, the article is here published.

EDITOR.

By JOSEPH CURRAN
President, CIO Maritime Committee & President, National Maritime Union

The gravity of the situation facing the American Merchant Marine cannot be overstated. In the last eighteen months well over 1200 ships have been laid up. Nearly 70,000 jobs for licensed officers, seamen, longshoremen and ship repair workers have disappeared. The trend continues. Despite the large-scale lay-up of vessels, many ships are moving half empty and rates are falling.

Contracts have been let for the construction of five passenger liners and forty-odd tankers, but an adequate amount of construction for the maintenance of a modern merchant marine and a strong shipbuilding industry has failed to materialize.

The remedy proposed by the shipowners and shipyards has been increased subsidization. H. J. Res. 412 and H. J. Res. 413, 80th Congress, provided new and increased construction subsidies, new contractual terms, new tax advantages, among other changes in the Merchant Marine Act of 1936.

The CIO Maritime Committee opposed H. J. Res. 412 and H. J. Res. 413 because we were convinced that they would be detrimental to the American Merchant Marine. These resolutions eliminated the scientific principle of parity from the act and replaced it with flat grants of Federal funds, a system which resulted in notorious maritime scandals in the past and in great harm to the American Merchant Marine. They delayed construction required by the 1936 act and allowed funds set aside for construction to be dissipated for other purposes.

H. J. Res. 412 and H. J. Res. 413 replaced the safeguards for the public interest found in the 1936 act with invitations for private gain. They replaced incentives for better management with incentives for financial manipulation and connivance. They threatened a new scandal from which public confidence in the American Merchant Marine might never have recovered. They would have paved the way for nationalization of our merchant fleet by making the U. S. Treasury the financier of the merchant marine.

The 81st Congress can do much to reverse the present decline in the American Merchant Marine. There are however problems which the industry alone can meet. Increased subsidization as a substitute for action to increase world trade, for more efficient management, for more activity in getting business, and for more intelligent leadership from the Administration and the Congress will rapidly end in further decline rather than in recovery for the maritime industry.

Before the 81st Congress can act intelligently on the problem facing the American Merchant Marine it must be appraised of the problems. Here are some of these problems which require investigation and constructive thinking along lines other than subsidization:

I. THE DECLINE IN UNITED STATES FOREIGN TRADE

United States exports have declined steadily since May 1947. While imports have shown some increase the combined figures show a sizeable decline. Thus in July 1948 the combined value of United States exports and imports was down 8% from July 1947 and 20% from May 1947. The unit value of exports and imports rose during this period so that shipping weight declined to a greater degree. The shipping weight of our exports was down more than one-third between August 1947 and July 1948 and that of our imports showed an insignificant increase.

The trade decline has hit the various lines in differing degrees but all have suffered. American shipping lines normally trading in the areas within the Russian orbit have met with a nearly complete cessation of business. American shipping lines trading to Western Europe, South Africa, and to South America are finding that dollar shortages are drying up trade.

II. MISMANAGEMENT

To a large degree the ills of the maritime industry are the result of mismanagement. Past fault can be only partially remedied but it is in the field of improved management that the hope of survival for the American Merchant Marine lies.

a. High Overhead Costs

R. Earle Anderson, former finance director of the United States Maritime Commission, in his recent book "The Merchant Marine and World Frontiers" states that the overhead costs absorbed 12.13 percent of gross receipts of the subsidized American steamship lines during 1938-39 and only 7.58 percent in the non-subsidized lines.

The 81st Congress should make a thorough investigation of the economics of the industry, the competitive factors which require subsidization, and the use of subsidies to date.

b. Lack of Aggressiveness in Getting Business

(1) *The Cost of Procrastination*—The American Merchant Marine has suffered from the lack of foresight and imagination of the men who manage it. How much cheaper it would have been to build the vessels the American Merchant Marine needs if management had moved ahead boldly at the close of the war! How many additional Amercian lines would have been well established by now and how much greater would have been the resources of the American Merchant Marine had management stepped forward! Instead management waited and blundered to the point now where the only salvation it can foresee is for the United States Treasury to bail the industry out.

(2) *Pooling Arrangements and Foreign Connections*—When American steamship lines, including subsidized lines, have cargo and revenue pools agreeing to a division of the trade not only with other American lines, but also with foreign lines, the inevitable effect is less activity on the part of steamship organizations to go out and secure or create more business. Similarly when American lines act as agents for foreign lines soliciting cargo for them it is inevitable that their own trades suffer. The 81st Congress should investigate the wisdom of outlawing pools and foreign tie-ups.

(3) *Rate Conferences*—The conference lines state that their contract rate agreements stabilized the industry. The non-conference lines maintain that these agreements cartelize the industry and choke off foreign trade. The 81st Congress should investigate the rate conferences.

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c. *Stupidity in Labor Relations*—Costly interruptions of service and heavy financial losses have resulted from the attempts of certain forces within the steamship industry to hog-tie and destroy the maritime unions. It is necessary to get labor relations in the maritime industry back in the hands of steamship management and out of the hands of association officials who delude themselves into thinking that their bread and butter depends on the continued disruption in maritime labor relations.

III. BUNGLING IN THE NATIONAL ADMINISTRATION

The absence of a consistent national policy towards the merchant marine has added to the woes of the industry. In late 1944, President Roosevelt announced "a bold and daring plan" for the merchant marine. When the steamship companies failed to take advantage of this opportunity they found, some 18 months later, that this program for new construction had been suspended indefinitely.

In more recent months national policy towards the merchant marine resembled a tug-of-war between various agencies of the Administration particularly in regard to the charter and sale of ships abroad.

Too often national maritime policy is decided on the basis of considerations far removed from the maritime industry and by agencies and officials other than those designated by the Congress to promote the American Merchant Marine.

Since the formation of the Maritime Commission, we have had alternate periods of one-commissioner rule and five-commissioner ineptness. All of the plans for a strong merchant marine will fail until competent public-minded commissioners are placed at the helm. We need commissioners who believe in a strong merchant marine under the United States flag; commissioners who have the intestinal fortitude and intellectual honesty to insist that patriotism in the merchant marine be ended.

IV. BUNGLING IN THE CONGRESS

The 80th Congress by dangling additional bait before the shipowners performed a serious disservice to the American Merchant Marine further delaying the long overdue construction of vessels and the necessary improvement in management.

The foregoing are problems which subsidies cannot solve. There are however problems which subsidization will meet. These are the problems of the normal competitive disadvantage of the American Merchant Marine resulting from lower living standards abroad and the abnormal disadvantage resulting from foreign subsidization and discrimination.

Insofar as subsidization is necessary it is our belief that the 1936 Act does the job as well as can be expected. The CIO Maritime Committee is cautious about subsidization because it is all too frequently a substitute for good operations. Certain ship operators are driving nationalization of the merchant marine in through the back door, through their advocacy of unprincipled subsidization.

The 1936 act is a good act. It provides safeguards for the public interest without destroying incentive for the shipowners. It provides ample reward for profitable operation while assuring the Treasury a refund out of excess profits. It is a law which is based on a sound principle, the principle of parity. It is not, as some operators would prefer, a mechanism for making up losses regardless of whether they be due to competitive conditions or inefficient management.

We are cautious about subsidization because some American lines operate successfully in the foreign trades without it. The fact that certain lines can so operate creates the as yet unrebutted presumption that subsidization encourages mismanagement. The 81st Congress should make a comparative study of the operations of subsidized and non-subsidized American-flag operators in the foreign trades as a prerequisite to an intelligent subsidy policy.

The CIO Maritime Committee has no ready-made answers on how to promote the recovery of the American Merchant Marine. The 10th National Convention of the Congress of Industrial Organizations laid down a 14-point program which if enacted will go a long way towards making a good start. The CIO calls upon the Congress and the Administration to:

1. Provide increased appropriations and guarantee steel allocations for the shipbuilding program.
2. Preserve the basic principles of the Merchant Marine Act of 1936.
3. Require subsidized lines to build the vessels necessary in their trade routes.
4. Stop all transfers of American-owned tonnage to foreign flags and return the "runaway" fleet under foreign flags to American flag operation.
5. Return commercial vessels under military control to private operation.
6. Strengthen and enforce ECA provisions for carriage of 50% of Marshall Plan cargoes in American vessels.
7. End unfair railroad competition against the domestic water carriers.
8. Prevent the rebuilding of the German and Japanese merchant marines.
9. Exempt seamen from the draft and enact the Merchant Seamen's War Service Act.
10. Liberalize naturalization requirements for aliens who served in our merchant marine during World War II.
11. Ratify the International Safety at Sea Convention 1948, and the ILO Seafarers Convention of 1946.
12. Extend marine hospital benefits for all seamen and provide social security and unemployment insurance for seamen on government-owned vessels.
13. Guarantee the right of seamen to strike in port, revise the archaic laws, and stop financing lockouts with government funds.
14. Drastically revise the maritime training service with emphasis on upgrading and with elimination of the military influences and imitations.

Most important there must be full support for measures which will revive and increase world trade. This means full support for the European Recovery Program with emphasis on economic revival of Western Europe. It means energetic efforts to spur intra-European trade and renewed efforts to revive east-west trade. It means a permanent reciprocal trade program free from the hog-tieing amendments added in the 80th Congress.

We urge the 81st Congress and the Administration to consider anew the proposal for a worldwide maritime pact contained in the CIO Maritime Committee Postwar Program released in May 1944. This proposal is an attempt to arrive at an international understanding in the maritime industry to prevent its collapse.

The maritime nations of the world, faced with declining net balances from their shipping operations due to less cargo, lower rates, and increasing costs, have adopted a suicidal course. They have all decided that the only way to meet the balance of payment problem in the face of declining net revenues per ship is to increase their fleet. Such action in the absence of successful efforts to increase the level of world trade can only result in serious over-tonnaging and economic disaster for the maritime industry. We are dead opposed to cartelization of the world shipping fleet either by private interests or by governments, but we are equally convinced that a modicum of planning in the maritime industry on a worldwide basis is essential if the industry is to thrive.

The CIO Maritime Committee will continue to fight hasty and ill-advised legislation. We will continue to expose inefficiency and bungling wherever we find it. Subsidization is no easy road to salvation for the American Merchant Marine.

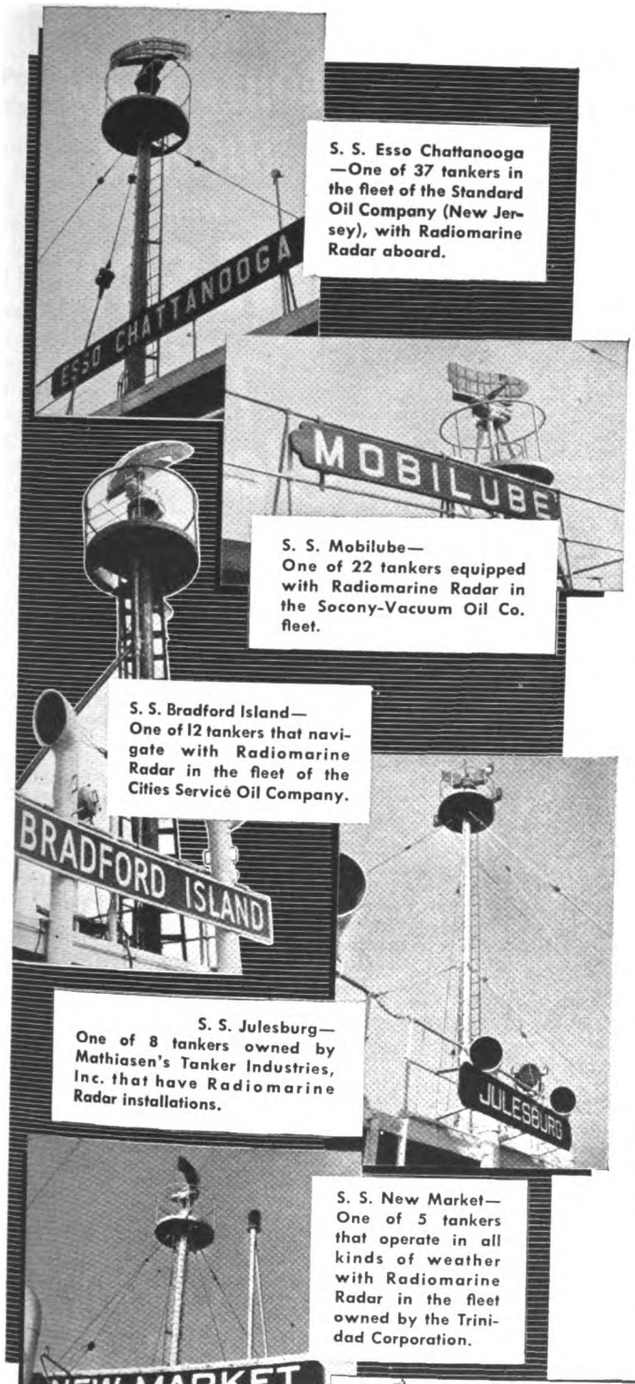
If the 81st Congress will make an early start on the investigations proposed above, the way will be paved for intelligent Congressional action early in the spring. Action on the 14-point program endorsed by the CIO and on the world trade and international shipping agreement issues can place the American Merchant Marine on the road to recovery. The CIO Maritime Committee pledges its full support and cooperation to the 81st Congress and to the administration in the drive for a more efficient, more modern, and more adequate American Merchant Marine.

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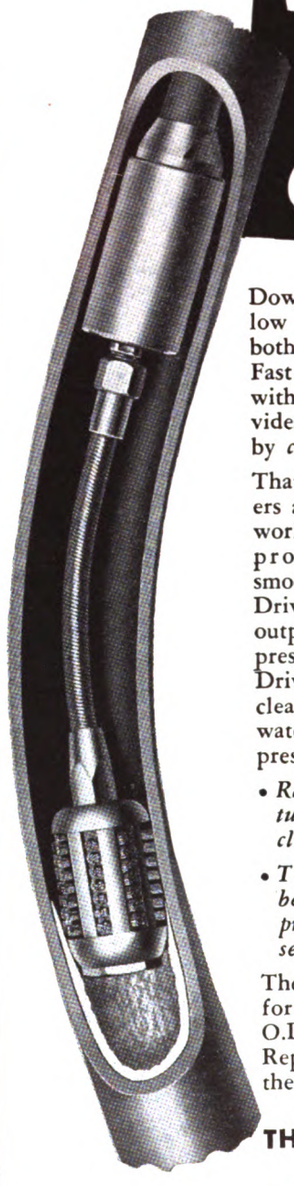
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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

NW Port Engineers Discuss Arc Welding & Diesel Engines

Announcement was made of the election to honorary membership to the Society of Port Engineers of Puget Sound of Captain W. D. "Whit" Hill, USCG (Ret.) former marine inspection officer. Captain Hill is the first to be so honored.

Speaker at the Puget Sound Engineer's January meeting, when newly elected officers were installed, was Don Coles, welding specialist, Westinghouse Electric Corporation, on the subject of AC Arc Welding. Slated for the February meeting is the annual dinner dance. A lecture on Diesel engines by courtesy of Fairbanks, Morse and Company is set for the March meeting.

The Society of Port Engineers, Columbia River Area, is also set for their March meeting with the Fairbanks, Morse program. The Westinghouse Arc Welding program featured their January session.

Personnel news notes from the Columbia River Area reports E. W. Eggerstedt, formerly with the Maritime Commission, has been assigned to duties with the Navy at the Puget Sound Navy Yard. J. D. Clarke has become affiliated with Commercial Ship Repair, San Francisco Division, as yard superintendent. Walter Tinsler, former marine surveyor with the Maritime Commission at Seattle, is taking it easy in California in the vicinity of Glamis.

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California Engineers' Program By Northern Equipment Co.

David Morgenthaler, associate director of research of the Northern Equipment Company, Erie, Pennsylvania, will talk before the two California societies of port engineers early this month on "The History and Development of Feed Water Regulators." The San Francisco talk will be made on Wednesday, February 2, and he will appear the following night before the Los Angeles society at Long Beach.

Northern Equipment Company manufactures the Copes Feed Water Regulator and is represented along the Pacific Coast by C. C. Moore & Company Engineers. Walter B. Hill, San Francisco, marine manager for the Moore company, arranged the port engineers' programs. The Southern California society set its meeting date one day ahead to be able to hear Mr. Morgenthaler.

While on the Pacific Coast, Mr. Morgenthaler also will address American Society of Mechanical Engineers' meetings at San Francisco, Los Angeles, Portland and Richland, Washington, and National Association of Power Engineers' groups at San Francisco and Los Angeles.

R. B. (Dick) Barton, General Electric Company, presented his firm's film "Power By Which We Live" at the January meeting of The Society of Port Engineers, Los Angeles. This gave in color and sound, the story of turbine construction.

At the January meeting of The Society of Port Engineers, San Francisco, Robert E. Streiff, Pacific Tankers, was elected president; M. C. Wright, Deconhil Shipping Company, vice president and George H. Harlan, United States Army Transport Corps, secretary-treasurer. New directors named were Herbert Steiner, Pacific Far East Line; John Clerico, Pope & Talbot Lines; Harry Martin, Moore-McCormick Lines and E. H. Williams, United Fruit Company.

Beginning with February, the San Francisco society will hold its monthly meetings at Joe DiMaggio's Restaurant at Fisherman's Wharf.

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Sees Continued Demand For Aluminum Products

It is probable that demand will continue to exceed supply for the early part of 1949 due to a continuing strong demand for aluminum and its products, according to Roy A. Hunt, president, Aluminum Company of America.

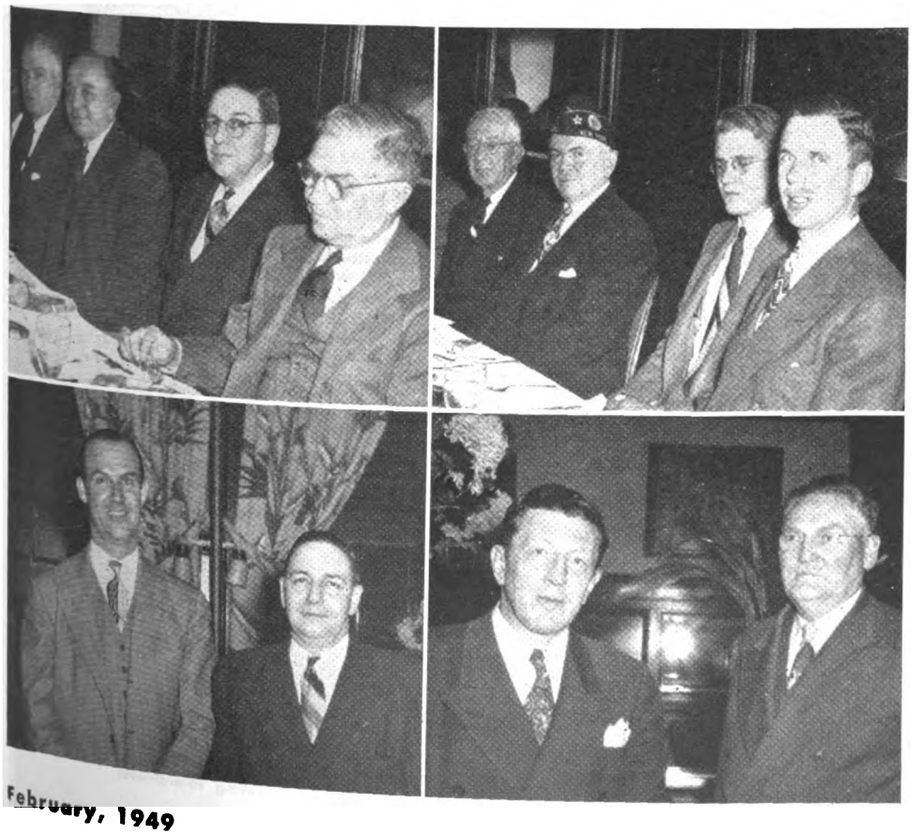
Droughts throughout many areas of North America, coupled with unprecedented industrial and domestic requirements for electric power since the end of World War II, have hampered the aluminum industry for many months, as large amounts of steady electricity are required for aluminum production.

To counter the effect of production losses from causes that will reduce the supply, Alcoa some months ago began erection of a smelting plant on the Gulf Coast at Point Comfort, Texas, which will use natural gas to generate the required electricity for aluminum production. These works should be in operation early in 1950. This natural-gas power plant will mark the first extensive peacetime use by Alcoa of electricity generated by other means than waterpower to produce aluminum, except for a brief period in the earliest days of the industry.

A CUSTOM OF THE NEW YORK Port Engineers society is to invite as honor guests to the December dinner meeting those men who have been speakers at meetings during the year.

Guests who attended were, top row, left to right, DR. A. C. PURDY, President, Bull & Roberts, Inc.; Captain J. J. MOCKRISH, USNR, Merchant Marine Reserve; F. W. GAINES, Vice President of the Society and Superintendent Engineer, Tankers Co.; Captain LEONARD FRISCO, USNR, Merchant Marine Reserve Representative; Captain HOWARD BRIDGES, U.S.C.G., Merchant Vessel Inspection Division, New York; Captain EDWARD A. HOLDEN, Commander, Robert L. Hague, Merchant Marine Post, American Legion; J. W. WESTBERG, Asst. to Pres., Bull & Roberts, Inc.; and JOHN S. LESLIE, President, Leslie Co., speaker at the December 15th meeting.

Bottom row: At the December 15th meeting of The Society of Marine Port Engineers, New York, N.Y., Inc., on the left, R. W. BOETTIGER, Sales Manager, Leslie Co., and F. W. GAINES, Vice President of the Society who presided. Photo to right: New members of The Society of Marine Port Engineers, New York, N.Y., Inc., are (left) JAMES McCARTHY, Port Engineer, Isbrandtsen Co., Inc.; and CLYDE DOW, right, Port Engineer, Waterman Steamship Co.



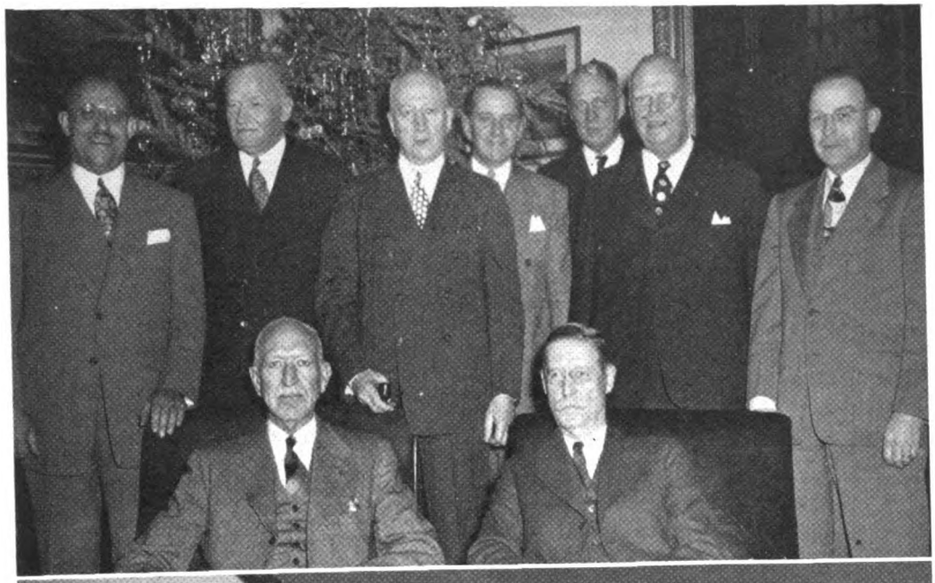
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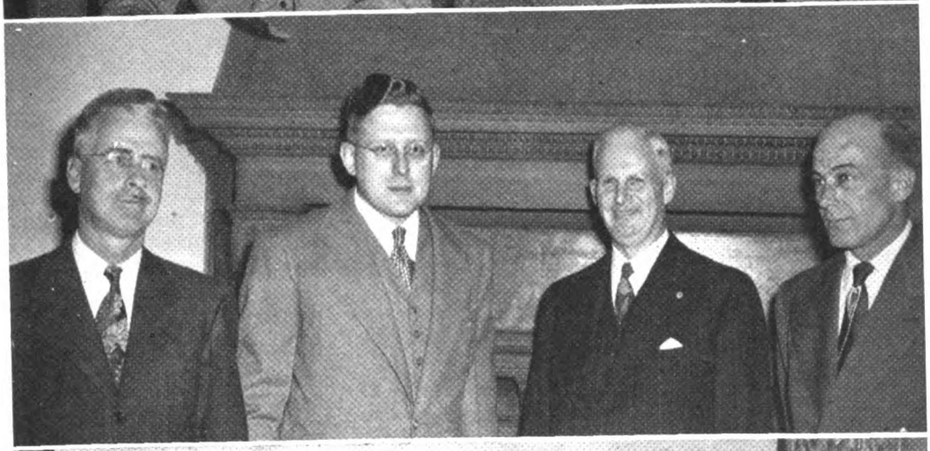
First Naval Architects Section Holds Seventh Birthday Meeting

Philadelphia Section established in December, 1941, honors founders.

The first local section of The Society of Naval Architects and Marine Engineers, the Philadelphia Section, honored its founders at a seventh anniversary meeting at the Engineers Club in Philadelphia, December 17th.

The occasion was marked by the cutting of a birthday cake by Chairman Samuel S. Morse. The founders who were present recounted the struggle in 1941 to obtain approval of the national council for the establishment of the first local section. That the idea of local sections was sound, the speakers pointed out, has been shown by the development of eight other local sections and the excellent quality of the papers presented before them. Credit was given to the work of the local sections for greater interest in the work of the national organization and the development of membership to its present high level.







The other eight local sections organized since the Philadelphia Section set the pattern, are: the New York Metropolitan, the Chesapeake, the New England, the Great Lakes, the Northern California, the Pacific Northwest, the Southern California and the Gulf.

The speaker at the December 17th Philadelphia Section meeting was O. B. Whitaker, marine sales manager, Sperry Gyroscope Co., whose subject was, "Modern Navigational Aids." Discussers of his paper included, Roland P. Eustis, electronics engineer, Keystone Shipping Co.; E. B. Dunn, electronics engineer, Atlantic Refining Co.; and Captain J. H. Hutton, Sun Oil Co.

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National NA Society Spring Meeting Will be Held in SF

San Francisco's Palace Hotel has been designated as headquarters for the 1949 spring meeting of The Society of Naval Architects and Marine Engineers to be held in that city May 12 and 13. It is tentatively planned that technical papers will be heard on the first day, Thursday, with the banquet on that evening, to be followed on Friday by a golf tournament, a sightseeing trip and a barbecue. Joseph A. Moore, Jr., president of the Moore Dry Dock Company, Oakland, is general chairman of the West Coast committee in charge. The three West Coast sections of the Society, Southern California, Northern California, and Pacific Northwest, are hosts for the first meeting of the National Society held on the Pacific Coast.

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THE PHILADELPHIA SECTION of The Society of Naval Architects and Marine Engineers, the first section to be established, held its seventh birthday party at the Engineers Club in Philadelphia, December 17th.

Of the founders those pictured top row were present at the December meeting. Standing, left to right, DR. LESTER M. GOLDSMITH, Chief Engineer, Atlantic Refining Co.; H. BIRCHARD TAYLOR, President, The Navy League; J. H. GORDON McCONECHY, Chief Engineer, Sun Shipbuilding & Dry Dock Co., Chester; CLARENCE L. DAVISON, District Product Manager, General Electric Co., Philadelphia; ARLO WILSON, Assistant Secretary of the national society, New York; WILLIAM S. HANEY, Vice President & General Sales Manager, Penn Steel Casting Co., Chester; LEE C. BENNETT, Manager, Marine Division, Westinghouse Electric Corp., Philadelphia.
Seated, left to right, REAR ADMIRAL A. J. CHANTRY, USN (ret.) and LEWIS H. KENNEY.

Center row: Presenting the paper, "MODERN NAVIGATIONAL AIDS" before the seventh birthday meeting of the Philadelphia Section, was O. B. WHITAKER (third from left) Marine Sales Manager, Sperry Gyroscope Co. The discussers were, left to right, ROLAND P. EUSTIS, Electronics Engineer, Keystone Shipping Co.; E. B. DUNN, Electronic Engineer, Atlantic Refining Co.; and, on the right, CAPTAIN J. F. HUTTON, Sun Oil Co.

Bottom row: Philadelphia Section cuts its seventh birthday cake. Left to right, REAR ADMIRAL A. J. CHANTRY, USN (ret.); SAMUEL S. MORSE, Assistant Naval Architect, Atlantic Refining Co., Chairman of the Section, cutting the cake; WILLIAM S. HANEY; J. H. G. McCONECHY; ARLO WILSON; LEE C. BENNETT; LEWIS H. KENNEY; DR. LESTER M. GOLDSMITH; O. B. WHITAKER, and, OSCAR WILDE, Asst. Electrical Engineer, Sun Shipbuilding & Dry Dock Co., Chester, meeting co-ordinator.

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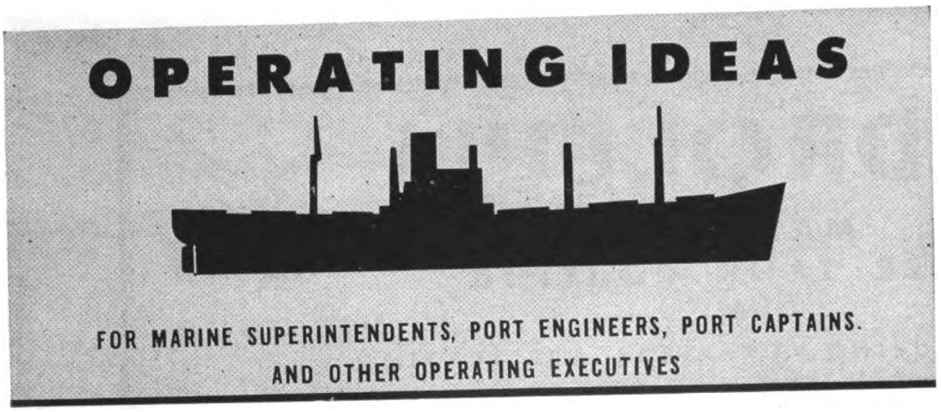


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Fractures in Welded Ships

By EDWARD V. LEWIS
Naval Architect
George G. Sharp

The problems of welded ship design and construction have been discussed in detail in various books, papers and articles. There have been detailed analyses of cases of structural failure in welded ships and experimental studies of materials and design details. A brief bibliography is given at the end of this article, but for those who do not have the time for a careful study of this material a brief discussion of failures of welded ships and their causes may be of interest. It would be understandable if operating personnel in particular should be somewhat apprehensive as to the possibility of failure in their own ships.

First of all it may be stated that all writers agree as to the basic soundness of the idea of the welded ship. The overall strength of all our welded ships has been found to be more than adequate, and tests in which longitudinal strengths of all-riveted and all-welded ships were compared showed almost identical behavior.

The reasons for the fact that there have been more structural failures in welded ships will be discussed below, but it is significant that as a result of the intensive investigations made and corrective measures carried out since the first failures occurred, the number and seriousness of casualties has been tremendously reduced. There are various ways of analyzing the data, but a general picture can be obtained from the fact that there were 90 serious fractures during the two year period 1943-44 and only 25 in the years 1946-47, in spite of the fact that the number of ships in operation in the latter period was much higher than in the former. The number of potentially serious fractures has likewise shown a marked reduction.

It is of interest to note that major fractures have occurred in the highest proportion in the Liberty ships and T-2 tankers. On the other hand the C-4's and Victory ships have had no serious fractures at all.

Causes of Structural Failure

In considering the causes of fractures in welded ships, there are primary and secondary factors to be noted. The primary factors were present in all cases of failure in combination with one or more of the secondary factors. The primary factors seem to be, according to the present state of our knowledge:

(1) A form of brittleness in the steel commonly used in shipbuilding known as "notch sensitivity," and

(2) Existence of "notches" in the ship's structure, in the form of either structural discontinuities or faulty welds.

The secondary factors have been:

(1) Above average longitudinal bending moments, caused by heavy weather or the particular loading of the ship, and

(2) Low temperatures.

The secondary factors alone would not have caused the failures. Although the bending moments may have been somewhat higher than had previously been encountered in the life of the ship, in no case did they approach the value for which the ships were designed. Likewise, low temperatures merely served to increase the brittle quality of the steel. These secondary factors may be considered the fuses which either together or separately set off the explosions.

Considering the primary factors then, the quality of shipbuilding steel has been found to be generally in accordance with specification requirements. But some of it has been found to be deficient in a quality not previously considered important. This is a form of brittleness known as "notch sensitivity." Specimens tested by ordinary tensile test methods showed the typical fractures of a ductile material, involving considerable "stretching" of the metal before breaking. However, when notched specimens were tested, sharp brittle fractures resulted which can be explained on the basis of the metallurgical properties of the steel in combination with the stress concentrations caused by the notch. It thus appeared that an additional requirement should be established for shipbuilding steel.

The question will naturally arise as to why this notch sensitivity should so often cause trouble in welded ships and so seldom do so in riveted ones. The answer to this question has not been finally and fully established, but it seems to lie in the following facts:

(1) A welded ship is more apt to have dangerous notches, since the possibility of faulty welding introduces a factor not present in riveted ships.

(2) The heating and cooling of the metal adjoining the welds may increase the notch sensitivity somewhat locally. It should be noted parenthetically that cracks have never been found to start in sound welds.

(3) Although it is now generally believed that "locked-in" stresses due to welding are not a direct cause of cracking in service, it is undoubtedly true that they may locally accentuate the stress concentrations at critical points.

(4) A riveted ship has additional local strength at certain points, a matter which has not yet been fully analyzed. For example, the gunwale angle and angle connecting the longitudinal hatch coamings to the deck provide reinforcement at very critical spots; the rivet flanges of beams and the plating seams provide extra stiffening for the deck so that stresses at hatch corners tend to be reduced; etc.

(5) Once started a crack which might have been only a minor one on a riveted ship may spread until it becomes a complete fracture of a deck or even of the entire hull.

The presence of notch-sensitive steel does not alone seem to have caused fractures of welded ships. It is always necessary that there be a notch as a starting point for the crack. A notch is any discontinuity in the structure, such as a cut in a sheer strake for the fitting of an accommodation ladder, a hatch corner, a hole in the strength deck for a vent, a foundation or fitting attached to a strength member, a crack in a bilge keel or bulwark, or a defective spot in a welding seam. Any such discontinuities in a highly stressed member cause even higher local stress concentrations. It is apparent that most of the types of notches listed result from poor details of design and that those involving welding defects result from poor workmanship.

An interesting fact disclosed by the investigations is that contrary to early conjectures, distortion due to welding has little bearing on the likelihood of fracture. Distortion is undesirable from the point of view of appearance and for other reasons, but the problem of minimizing it is a very different one from that of avoiding fractures. For example, welding sequences are very important in minimizing distortion but have little effect on liability to fracture at some later time. Hence, a ship with a wavy deck is not necessarily any less safe than a ship with a straight one.

Corrective Measures

A great deal of experimental work has

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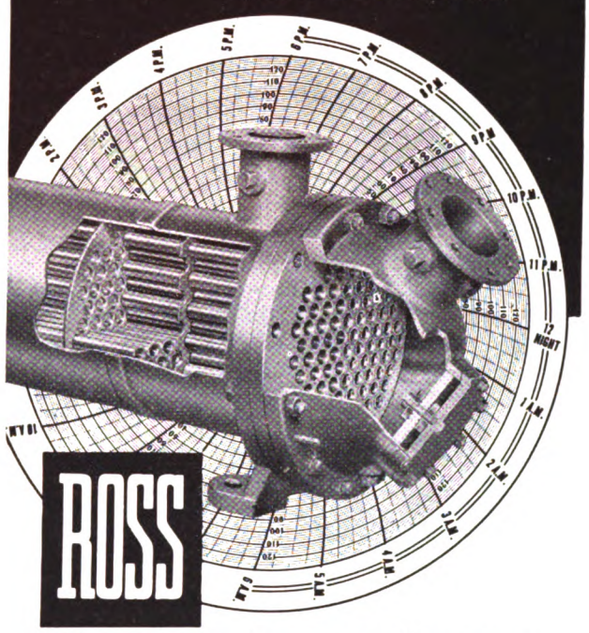
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been carried out in an attempt to eliminate the causes of failure discussed above. In dealing with the problem of steel quality, the American Bureau of Shipping has adopted new chemical requirements for plates, the most important features of which are that steel for plates over ½ inch thick is to have a specified percentage of manganese together with an upper limit on carbon percentage, and for plates over 1 inch thick steel is to have a specified amount of silicon. Also plates over one inch in thickness are to be manufactured by a mill process which will produce a fine grain structure. It will be noted the requirements become more strict with increasing thickness. This results from the fact that plates of the same composition show increasing notch sensitivity with increase in thickness. It is felt that these new requirements will greatly reduce the likelihood of notch sensitive steel finding its way into welded ships.

The problem of elimination of notches has been attacked in two directions, one of improved workmanship and the other of modification of design details. Faulty workmanship appears to have been largely a wartime condition which has been reduced to a minimum in peacetime shipyards with improved supervision.

Design improvements have been in the form of elimination of all unnecessary discontinuities, such as avoiding notches in the sheer strake, separating bulwarks entirely from shell plating, providing minimum connection of bilge keels to shell, and providing well-rounded reinforced corners in all deck and shell openings. In many existing vessels built with square hatch corners, the corners have been rounded and doubling plates have been installed.

In order to prevent minor cracks from developing into major fractures, it has been found that riveted seams are very valuable. Those Liberty ships which had riveted shell seams, for example, were found to have a much better record in regard to serious fractures than the all-welded ships. As a result an extensive program of installation of "crack arrestors" has been undertaken on Liberty ships and T-2 tankers. As a rule, a riveted strap is fitted just outboard of the hatches and another in the stringer plate or sheer strake or in the connection of the two. All new ships have at least riveted gunwale angles. Riveted straps have also been installed in 'tween decks of refrigerated ships, since the low temperature effect has often proved to be serious. All of these crack arrestors have had an excellent record—not in preventing cracks, but in limiting their spread.

Another wartime measure which was effective in reducing the casualty rate attacked the secondary factors discussed above. Vessels which had the special design features and riveted straps were assigned to the trade routes where the worst weather and/or lowest temperatures would be encountered. Also careful consideration was given to the distribution of cargo or ballast to minimize longitudinal bending stresses.

Practical Steps to Avoid Trouble

The ship operator can take a number of steps toward increasing the safety of his ships from structural failure. First, he can make sure that all measures recommended by the U. S. Coast Guard and Classification Society for each class of vessel have been complied with, particularly if his trade involves bad weather and low temperatures. Second, he can be careful to avoid the accidental creation of a notch in the course of operation and maintenance of his vessels—as in the installation or removal of fittings, for example. Third, all personnel should be on the alert to discover cracks, even in minor parts or fittings so that they can be repaired before developing into serious fractures. If a small crack is found, a hole should immediately be drilled at its end to prevent it from spreading.

In view of the great strides which have been taken toward understanding and eliminating fractures of welded ships, the ship operator who has followed the above measures need have no more fear for the safety of a welded than of a riveted ship.

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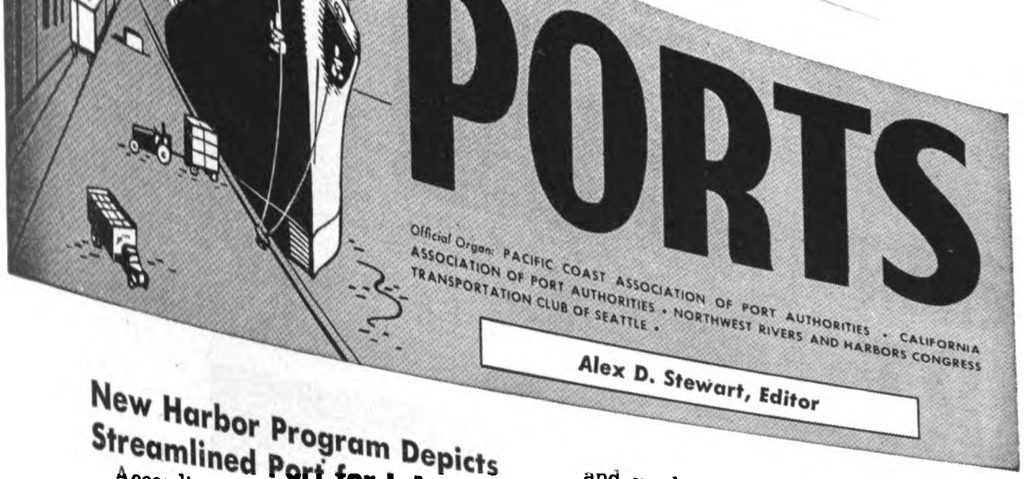
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New Harbor Program Depicts Streamlined Port for L.A.

According to Arthur Eldridge, general manager of the Port of Los Angeles, the Port's 1948-49 budget of $17,069,539 approved by the Los Angeles Board of Harbor Commissioners includes the $11,000,000 for new berths, wharves, marine terminals and buildings now under construction or planned for the immediate future.

Nearing completion is a $1,500,000 concrete wharf and transit shed extension at Berths 179-180 (inner harbor). This structure will be a modern general cargo terminal joining the existing terminals at Berths 178 and 181, adding greatly to their efficiency and operation.

Work involved on the project includes the construction of a concrete wharf 812 feet in length, a steel frame concrete 764-foot transit shed with office facilities on the water side, railroad tracks, pavement, and other improvements. The completed extension will provide berth space for two freight vessels and will be served by high-line and low-line trackage. Ample storage space will be available at the rear of the terminal.

A major project now underway is the construction of a modern passenger freight terminal at berths 153-154 (inner harbor) at an estimated cost of $4,300,000. This project includes a wharf, 1,400 feet long, and two transit sheds, one 567 feet by 120 feet and the other 546 feet by 160 feet. The combined passenger and cargo terminal will have facilities on the second floor to handle passengers and baggage and for U. S. Customs inspection when required. To date construction contracts totaling a $1,751,455 have been let, and work is progressing on the wharves and rail facilities. In 4 months contracts for additional structures costing $2,000,000 will be awarded.

Reported by the Port is the fact that for several years the Port of Los Angeles has been the ranking fishing port in the United States—both in weight of fish landed and the value of the catch. To provide berthing space for vessels serving this big industry at the port, the Board of Harbor Commissioners has under construction a new concrete wharf off the main channel at Berth 73. The wharf is 2,096 feet long and 40 feet wide and its total cost $1,250,000.

A sum of $650,000 will be spent for new municipal fish markets at the foot of Twenty-second Street at Berth 72 on the main channel. The markets are estimated to cost $412,000, and the concrete wharf 460 feet long and 40 feet wide will cost $238,000.

Another improvement currently planned for the Harbor will result in the development of the large west basin area. Negotiations for the removal of the Southern Pacific Drawbridge across the entrance channel to the West Basin are now under way. The Harbor Department has set aside in this years' budget $3,300,000 for west basin development which will include building a marine passenger and freight facility just north of Berth 145.

Extensive repair work has been completed in the Harbor area in the last two years. Untreated deck structures have been repaired with creosoted materials. Considerable replacement of fender piling has been done to wharves. Total expenditures last year for maintenance work exceeded $625,000.

Gulf & So. American SS Co. Opens New Chilean Port

With the arrival of the Gulf & South American Steamship Company's vessel ss GULF SHIPPER, the new port of San Vicente, Chile, was officially inaugurated. This new port is the southernmost port in Chile served by Gulf & South American SS Co., New Orleans, and ships of that company turn around at San Vicente at the end of their 5000 mile voyage from the Gulf and commence their homeward trip.

San Vicente, which is located near Talcahuano, Chile, is equipped with an excellent wharf and other modern port facilities, and has been especially designed to serve the Pacific Steel Company's plant located nearby. This plant is being built with American materials and machinery, many of them shipped from New Orleans, Houston, Mobile and other Gulf ports.

After the inaugural ceremonies His Excellency don Gabriel Gonzales Videla, president of the Republic of Chile and his party were welcomed aboard the GULF SHIPPER by its master, Captain Julian S. Lee, and a reception for the President and the government officials was given aboard the vessel.

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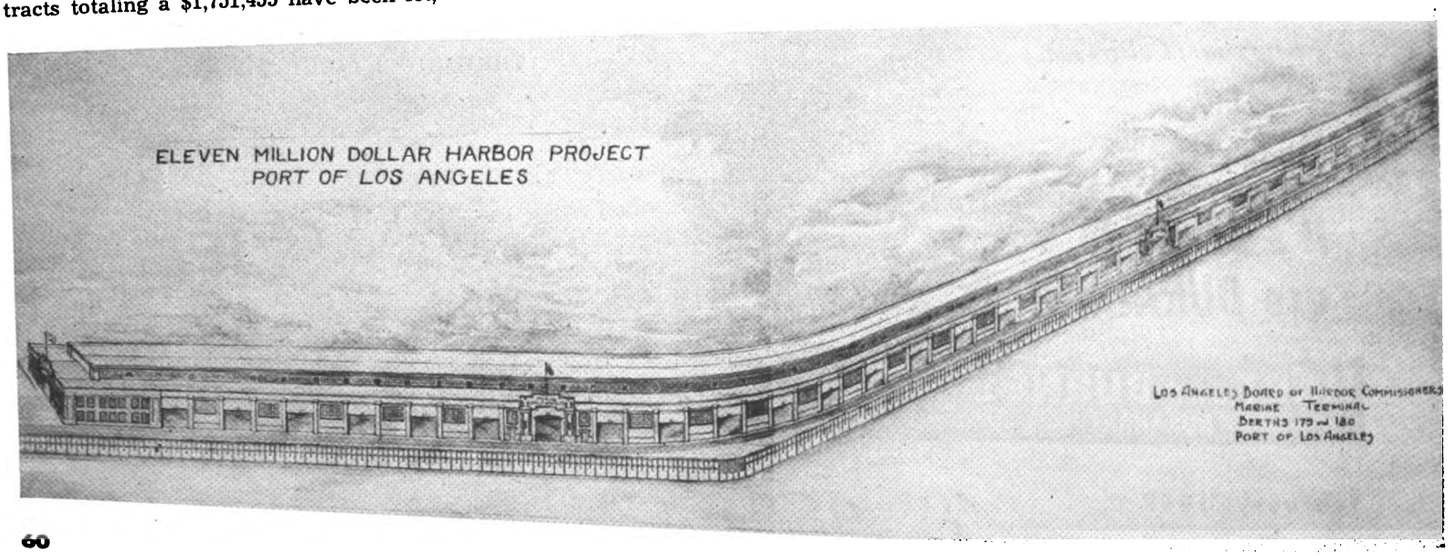
Pan-Atlantic Asks To Serve Jacksonville

The Pan-Atlantic Steamship Corp., a subsidiary of Waterman Steamship Corp., announced recently that it was applying to the Inter-State Commerce Commission in Washington for a permit to serve Jacksonville, Florida, on its northbound and southbound services from North Atlantic and Gulf ports.

Jacksonville has not been served regularly in coastwise trade since the end of the war.

⚓ ⚓ ⚓

Philip S. Truckey has been named traffic agent for Ames Terminal, Seattle. He joins the Ames Terminal staff with a favorably known experience in traffic and pier management gained from many years with the Alaska Steamship Company, later with the Army Transport Service, and more recently with the Alaska Fast Freight Express.



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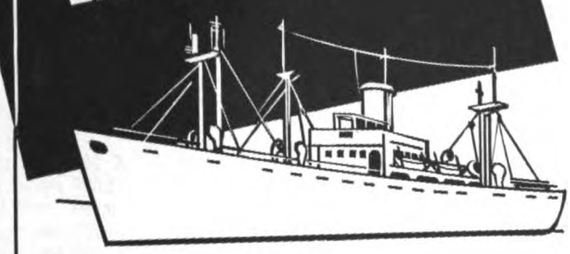


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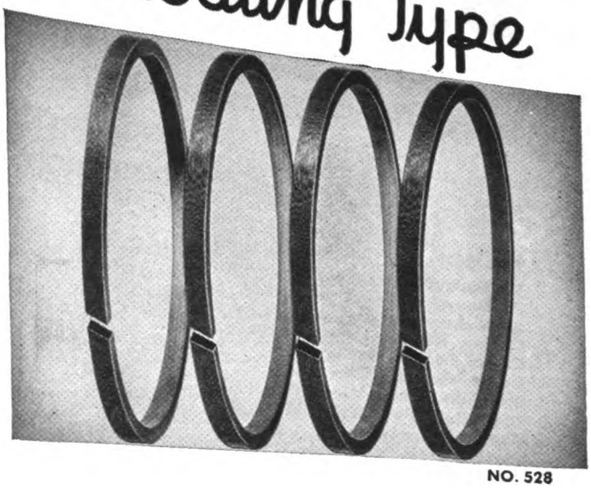
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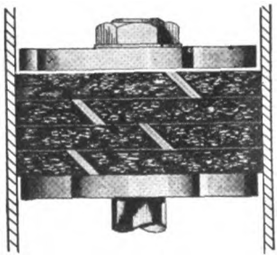
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Marine Steam and Electrical Developments of 1948

In his year-end summary E. K. Henley, manager, Marine Divisions, General Electric Company, Schenectady, N.Y., commented in part:

"Designing and building propulsion equipment for more than a third of the tankers contracted for in this program will provide helpful experience for the future when we (General Electric) will be working on ships that are not yet even figments in the minds of planners." (General Electric has propulsion turbines and gears on order for nineteen large tankers. Nine of these will deliver 12,500 shaft-hp at 112 rpm; maximum continuous operation can be as high as 13,750 shaft-hp. The combined steam pressure and temperature, 835 lb., 840 degrees F., is the highest ever used in merchant ships.)

Again quoting Mr. Henley: "Marine propulsion turbines using steam at 835 psi and 840 F are merely steps in the ladder to more economical ships. Our engineers are continuing to study the problems entailed in providing more power more economically for ship propulsion. We know that steam conditions allowable aboard ship can be raised. It is only a matter of time before merchant ships will be using steam at 1,000 degrees F, or perhaps higher.

"Trailing the tanker program, but beginning to gather momentum, is the upswing in passenger ship construction. New liners being designed and built today are examples of the continuing advancement of naval architecture.

The American President Lines now has three ultra-modern passenger ships under construction that will give them one of the finest fleets in the world. These three ships, powered by G-E geared turbines, will cruise the world at 19 knots, carrying 228 passengers.

"Advancement has been made not only in main propulsion units but in auxiliary power as well. Turbine-generator sets using the same steam conditions as main turbines will supply electrical power for virtually all the varied equipment on board a modern ship. More and more electrical equipment is being used on shipboard now. As the demand for this equipment grows, the means for furnishing power must grow as well. The day of inefficient steam auxiliaries is passing.

"A large number of the merchant ships now under contract are being equipped with General Electric's auxiliary equipment. More than 20,000 kw will be supplied to American ships by G-E auxiliary turbine-generators alone. Two luxury liners being built for American Export Lines will be fitted with G-E auxiliary turbine-generators, deck and underdeck motors, controls and switchboards. Ships may never be run entirely by push button, but every day more of the work is being done electrically.

"Where electricity is impracticable, mechanical drive turbines are taking the load. The use of a new mechanical drive turbine, called the 'Type DP,' for cargo pump and fan drives has grown steadily since its introduction last spring.

"The CRISPIN OGLEBAY is a good example of increased use of electric power aboard ship. This Great Lakes ore carrier, formerly the bulk carrier S.B. WAY, was converted last spring by the American Shipbuilding Co. with our engineers taking part in the work. The ship was almost completely rebuilt inside, and a high-speed cargo unloading system was installed. The unloading system, operated and controlled by G-E equipment, makes the OGLEBAY the most modern self-unloader on the Great Lakes.

"One of the features of the system is the huge belt boom used to dump the cargo on the shore. This boom, the largest ever installed aboard a ship, is 240

(Continued on Page 64)

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TABLE XI

Shipbuilding and Repair Plants Recommended for Retention by Overseas Consultants

	Name of Company	Location	Estimated Capacity New Work	Repair
1.	Nippon Steel Tube Co.	Yokahama	40,000	354,780
2.	Mitsubishi Hvy. Ind. Co.	Yokahama	.....	396,780
3.	Hitachi Shipbuilding Co.	Osaka	30,000	324,780
4.	Mitsubishi Hvy. Ind. Co.	Kobe	50,000	565,500
5.	Harima Shipyards Co.	Hyogo	25,000	462,030
6.	Hitachi Shipbuilding Co.	Innoshima	.....	508,980
7.	Fujinagata Shipyards Co.	Osaka	8,000	210,000
8.	Hakodate Dockyard Co.	Hakodate	3,000	219,000
9.	Mitsubishi Hvy. Ind. Co.	Shimonoseki No. 1	.....	158,220
10.	Mitsubishi Hvy. Ind. Co.	Shimonoseki No. 2	80,000	105,480
11.	Mitsubishi Hvy. Ind. Co.	Nagasaki	60,000	426,840
12.	Mitsui Shipbuilding Co.	Tamano	3,000	499,500
13.	Kyushu Shipbuilding Co.	Wakamatsu	10,000	84,600
14.	Kasado Dockyard Co.	Kasado	5,000	210,000
15.	Niigata Iron Works Co.	Niigata	500	.....
16.	Hakodate Dockyard Co.	Muroran	.....	150,000
17.	Hakodate Dockyard Co.	Otaru	3,000	39,000
18.	Hashihama Dockyard Co.	Shikoku	2,000	97,500
19.	Hayashikane Shipbuilding Co.	Shimonoseki	10,000	38,850
20.	Hitachi Shipbuilding Co.	Mukaijima	6,000	241,350
21.	Nipponkai Dock Ind. Co.	Iwase	5,000	99,000
22.	Namura Shipyard Co.	Osaka	6,000	157,500
23.	Sanoyasu Dockyard Co.	Osaka	30,000	126,000
24.	Ishikawajima H. I. Co.	Tokyo	18,000	232,200
25.	Uraga Dockyard Co.	Uraga	20,000	139,000
26.	Hitachi Shipbuilding Co.	Sakurajima	1,500	150,000
27.	Tohoku Dockyard Co.	Shiogama		100,500
	Total		426,000	6,094,390

TABLE XII

Allocation of Japanese Shipping on Foreign Routes—1934

(Unit: 1,000 gross tons)

Routes	LINERS Total Tonnage	TRAMPERS Total Tonnage	TOTAL Grand Total
KINKAI (Nearseas)..... Zone 1	557	674	1,231
KINKAI (Nearseas)..... Zone 2 3	156	290	446
ENYO (Farseas).	1,225	410	1,635
Total.....	1,938	1,374	3,312

What's the Score on Postwar Jap Shipping?

(Continued from Page 32)

same period the United States carried less than 30% of our own entire foreign trade! Today we are fighting desperately to reach the modest goal of carrying 50% of our own foreign trade in American-flag bottoms, while the Army advocates rebuilding our former enemy to a point where she can carry better than 65% of her foreign trade.

Nor is this 65% a true picture. The ultimate objective is to build the Japanese economy around the 1930-34 level. But that level does not exist today nor will it for many years to come. Therefore, if we charter 120 Liberty ships to the Japs, bringing their fleet immediately to 3,000,000 tons, and subsidize a building program to bring the level to 4,000,000 tons, there is no possible place for Japan to utilize this 2,000,000 extra tons except in cross trades in cheap-labor competition with the U.S. and our former Allies, with whom we are now competing at a much higher cost!

Furthermore, in view of the expansion of the Japanese economy and the capital supplies obviously being imported into Japan in preparation for war during the 1930-34 period, it does not seem at all reasonable that this period gives a proper indication of the country's needs for a *peacetime* merchant fleet.

If the economic war potential of Japan is to be guarded by the United States and our Allies, the Japanese should not be allowed to enter vessels into far-seas foreign trade at all. The determining factor controlling the size of the Jap fleet should be her ability to utilize tonnage to the extent of carrying 100% of her domestic commerce, and 50% of her near-seas commerce.

It makes as much sense to rebuild the Jap fleet to prewar levels to permit her to earn U.S. dollars as it would to restore all of Japan's prewar foreign investments for the same purpose, and from these she received far greater net balances than from shipping.

To subsidize a 4,000,000-ton Japanese fleet to compete against a partially subsidized U.S. fleet makes no sense at all. Why not have the Army build vast steel mills in Japan where they can utilize cheap labor and then buy steel from them rather than from U.S. mills? It would be much cheaper steel. But if the government would not do that, then why should it advocate building Jap ships which could carry U.S. freight at much lower rates?

American shipowners are not against a 2,000,000-ton Jap fleet which can be utilized to bolster the domestic economy of the nation. But every American citizen, from the ranks of both labor and business, should be unalterably opposed to subsidizing cut-throat competition!

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Marine Steam and Electrical Developments of 1948

(Continued from Page 63)

feet long, nearly half the length of the ship itself. It is powered by a 400-kw motor.

Repair Service

"Marine repair shops operated by the company at all major ports were kept busy during 1948. One of the major jobs handled was the complete overhaul of the ms ALASKA STANDARD. This unusual 210-foot tanker had been on uninterrupted duty in Alaskan waters for 24 years without a major repair being made. Over a million miles were logged as she delivered a wide variety of petroleum products practically from door to door, in all the bays and inlets of southeastern Alaska.

"Finally the ALASKA STANDARD was given time off and the San Francisco Service Shop gave her electrical equipment the first complete overhaul since commissioning. Power was stepped up and her G-E motors and generators were given a thorough reconditioning.

"A new G-E Apparatus Service Shop in Boston recently joined the network of G-E shops providing 'Keep 'em Sailing Service.' It is equipped to repair any electrical apparatus General Electric builds and can do many of the smaller jobs needed by ships. This will take some

(Continued on Page 66)

TABLE IX

Total Net Shortages and Tonnage in Surplus to a Balanced Merchant Fleet of 2,000,000 Gross Tons

Type	Percentages	For a Balanced Tonnage	Present Tonnage	Shortage	Surplus
Cargo.....	.695%	1,390,000	1,151,266	238,734	.....
Semi-Cargo	.242%	484,000	141,308	342,692	.....
Passenger .	.032%	64,000	74,142	.....	10,142
Tankers...	.031%	62,000	200,022	.....	138,022
Total...	100%	2,000,000 G.T.	1,566,738 G.T.	581,426	148,164
		433,262		433,262	

TABLE X

Wage Rates[1] of Selected Personnel

Rating	American Vessel	Japanese Vessel
First Mate.....	$200 per mo.	$39 per mo.
Chief Engineer.....	305 " "	60 " "
First Assistant Engineer.....	199 " "	38 " "
Radio Operator (1st class).....	128 " "	40 " "
Able Seaman.....	72 " "	14 " "
Ordinary Seaman.....	57 " "	12 " "
Fireman.....	75 " "	22 " "
Oiler.....	84 " "	17 " "

[1]The figures in the American Vessel column represent averages, whereas the figures in the Japanese column are base-pay rates.

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  Coast Guard Approved
- **T2 TANKER STEAM CARGO WINCHES**
  5 Ton Capacity
- **GALLEY RANGES**
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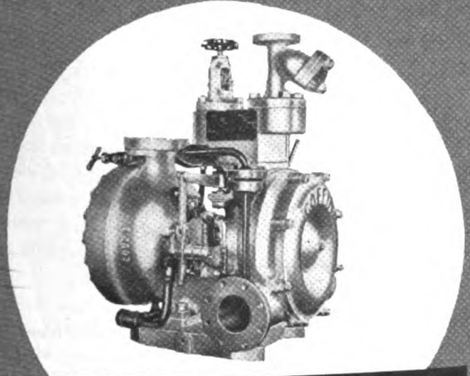
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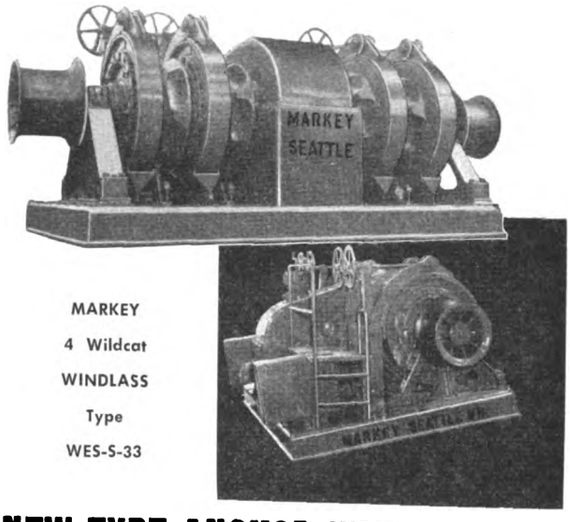


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NEW TYPE ANCHOR WINDLASS FOR OFFSHORE DRILLING TENDER

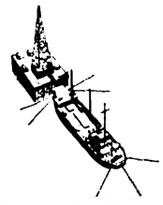


The 40 years of Markey designing and manufacturing skill are all combined in the big multi-anchor windlasses for the California Company's converted LST Oil Well Drilling Tender S-21. Powered by two 50 h.p. motors . . . Controlled and operated with half the manpower . . . Gears enclosed in a streamlined housing . . . Windlass units that are a 'Finished job' and will operate both efficiently and steadfastly in the face of tropical storms, shallow seas and tidal variations.

The very name "MARKEY" on deck equipment is an assurance of lasting performance, whether handling 2-1/16" stud link chain for 4 anchors at a time or for ground tackle on a fishing vessel. Helping the maritime industry provide quality machinery and lasting service is an old story with Markey, but a new experience for this branch of the oil industry.

You are invited to write or wire us regarding your specific requirements, or see either of the following representatives for prompt information on any type of deck machinery.

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MARKEY
Machinery Company Inc.
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Hoover Commission Reports

(Continued from Page 36)

necessary support and freedom so that the new organization can achieve its objectives?

Industry Advisory Committee

At present a multitude of informal contacts occur between industry representatives and Commission officials, both members and subordinates. Some of these contacts are in the open, some are *sub rosa*. No stigma can be attached to the great majority of such contacts, especially in an agency which is frankly promotional. A question can properly be raised, however, as to whether the many different elements in the industry are receiving proper representation in the Maritime Commission's councils. Furthermore, the present situation has led to the suspicion, perhaps unfounded, that certain elements of the industry have had more consideration from the Commission than other elements.

Since under the statute the maritime agency must work closely with the industry, it is desirable that these relationships be formalized and publicized by the appointment of an advisory committee fairly representative of the different parts of the industry, with a small permanent secretariat located at the agency. The primary duties of this committee would be to exchange information with the maritime agency, and to provide authoritative statements of the members' views on current problems.

Summary of Recommendations

The preceding recommendation may be summarized as follows:

Creation of Maritime Administration

A. A Maritime Administration, headed by an Administrator should be established in the Executive Branch.

B. The Administrator should take over from the Maritime Commission all its operating, administrative, promotional and other functions except as stated below.

C. The Administration should be part of an appropriate department: in peacetime, the Department of Transportation, if one is established or if not, the Department of Commerce or of the Navy; and in time of war, the Department of Navy in any event.

Changes in Maritime Commission

A. If recommendation 1 is adopted, the Maritime Commission should continue as a five-man independent agency—

(1) It should exercise regulatory control over rates, fares, charges, agreements and practices in the maritime industry, upon complaint by the Administrator.

(2) The Commission should also have authority, upon the petition of carriers, to investigate the administration of the subsidy program by the Administrator and to report publicly its conclusions.

B. If the Maritime Administration is not established (as recommended above), the Chairman of the Maritime Commission should be made responsible to the President for the administration of the agency and for policy-making as to its operating functions.

C. Since the reorganization of August 1948 has introduced the main reforms of internal organization which can be made without the basic changes called for by recommendation 1 or the alternative recommendation above, no further recommendations are offered on that topic.

D. Regional representation should not be a factor in appointing members of the Commission.

Creation of Advisory Committee

The Maritime Administration (or the Maritime Commission, if no Administration is established) should create an Industry Advisory Committee, fairly representative of the industry and equipped with a small staff.

⚓ ⚓ ⚓

More LSM's Converted to Cargo Ships

Recent LSM conversions on the Pacific Coast included two by the Forster Shipbuilding Company, Terminal Island, California, for dry cargo service in the Caribbean trade, and another at Portland, Oregon, for transporting lumber from that city to the Hawaiian Islands and returning with machinery, scrap iron and other war surplus.

The two craft converted at Terminal Island were LSMRs. They were named the JOSHUA and the ISAIAH and belong to the Maritime Transport and Trading Company, New York, which will operate them under the Panamanian flag. Karl French, San Pedro naval architect, prepared the plans and specifications. Each ship is equipped with De Laval oil purifiers.

The northern conversion, renamed the MOKUPAPA, was the first craft to leave Portland after the recent 95-day maritime strike, carrying approximately 350,000 board feet of lumber and some 40,000 Christmas trees to reach Honolulu before the holidays. The vessel originally was purchased in Hawaii by the Collins Concrete and Steel Pipe Company, which sailed her to Portland for conversion. L. S. Baier, Portland consulting marine engineer, and the owner, J. J. Collins, head of the concrete and pipe company, directed the structural changes.

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Marine Steam and Electrical Developments of 1948

(Continued from Page 64)

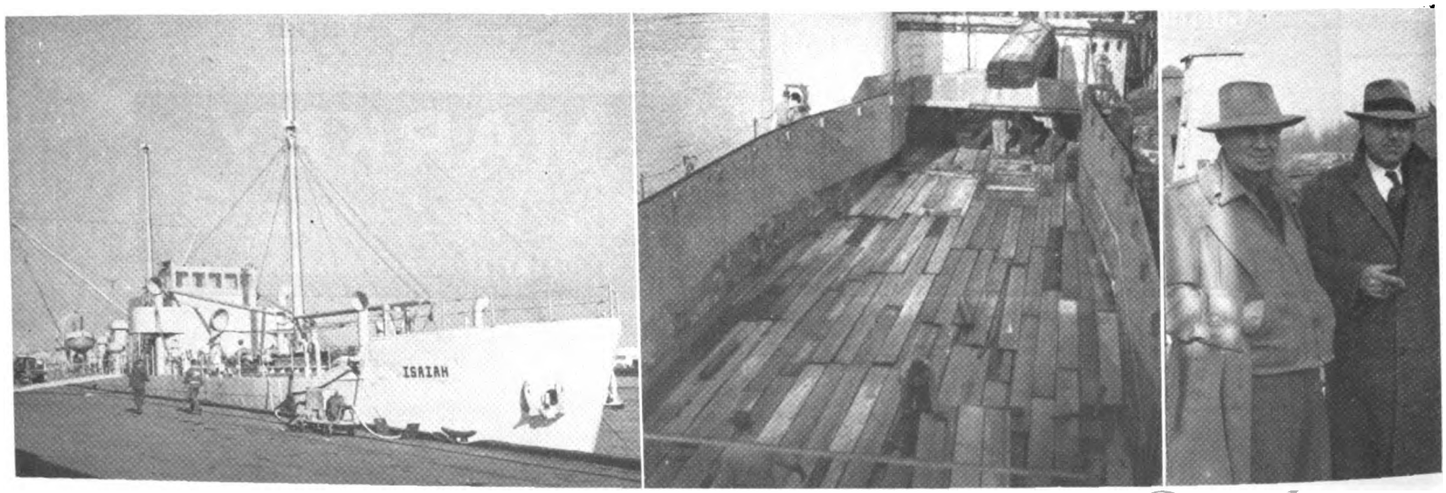
of the load off our other east coast repair centers.

Diesel Electric

"The field of diesel-electric propulsion for marine use has expanded greatly in recent years and is still growing. At present G-E is building the entire electrical installation for two modern streamlined ferries for the Norfolk County Ferry Commission. These diesel-electric-powered ships will operate on the ⅞-mile run across the Elizabeth River, where ferry boat history can be traced back over 300 years.

"As one of the major suppliers of electric and propulsion equipment for marine use, I think we can honestly say that 1948 has been an excellent year not only from our point of view but from the viewpoint of the country as a whole. Shipyards are leaving their near-dormant stage and the industry is again becoming vigorous and alert."

WEST COAST LSM CONVERSIONS—Left to right: The mv ISAIAH, one of two LSM R's converted by Forster Shipbuilding Company, Terminal Island, California; the mv MOKUPAPA, a former LSM converted at Portland and J. J. COLLINS, owner of the latter vessel and L. S. BAIER, consulting marine engineer, who directed the conversion. In the center picture is shown a five-foot protective coaming built around the large main hatch.



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HER CROSSHEAD PIN BEARINGS WERE FROZEN

A Ship Lay Idle In The Philippines
A Consulting Diesel Engineer Was Flown in For Survey

He reported: "It was not the babbitt in the metal that caused the trouble, but instead, acids in the lubricating oils."

He acted: "I brought a can of special oil with me which eliminates the hard pressure of metal to metal . . . in a short time we did not have to worry about the bearings anymore."

He recommended: "When the ship arrives at a Pacific port the oil should be taken out, either purified or renewed and the oil tanks cleaned. As some of the old oil will still remain in the system and cannot be removed, some BARDAHL OIL should be added."

IT TOOK $1.50 TO GET HER UNDERWAY

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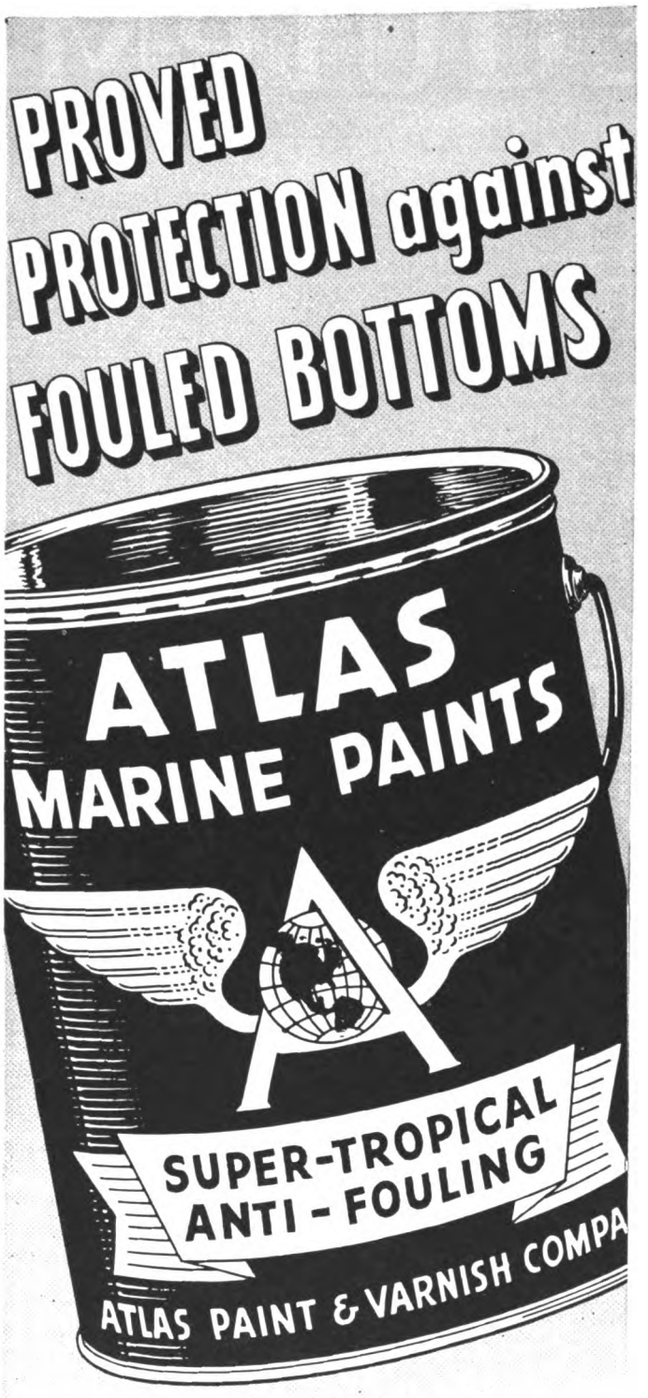
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EQUIPMENTALK

Personnel Shifts in Pacific Northwest for Raytheon

Coincident with the merger of Submarine Signal Company and Raytheon Manufacturing Company and the establishment of the Submarine Signal division of Raytheon, W. F. Dolezal has been named district manager for the company's 7th district embracing Washington, Oregon, Idaho, Montana, and Wyoming with headquarters at Seattle. E. J. Schneider has been transferred from Portland to Seattle to become manager of the service department. The Astoria, Oregon, office of the Submarine Signal division is being maintained with Andrew Dunbar in charge as local manager.

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Devoe & Raynolds Making Marine Finishes on Coast

The Devoe & Raynolds Co., Inc., of New York, are now manufacturing their well-known line of marine and yacht finishes in the recently acquired plant of the Bishop-Conklin Co., 3950 Medford St., Los Angeles. Production of the entire marine line began in January.

Warehouse stocks are maintained at the Los Angeles plant and also at 640 Second Street, San Francisco.

Stocks for spot deliveries are carried by the following marine supply firms who also handle the sales of Devoe & Raynolds marine and yacht finishes on the Pacific Coast:

Pacific Marine Supply Co., Seattle; Oregon Marine Supply Co., Portland; Weeks-Howe-Emerson Co., San Francisco; Atlas Marine Supply Co., San Pedro; and the Nuttall-Styris Co., San Diego.

Devoe & Raynolds' marine and yacht finishes include: Standard Marine Paints; Hongkong Varnish; Plastic Bottom Paint, Toxic Boot Topping, and a complete line of synthetic finishes.

Colman Clarke is Pacific Coast marine salesman for Devoe & Raynolds with headquarters at 640 Second Street, San Francisco.

COLMAN CLARKE, Pacific Coast Marine Salesman for Devoe & Raynolds Co., Inc. New York, who headquarters in San Francisco.



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Combustion Engineering and Superheater Merge

Two well-known power equipment manufacturers, Combustion Engineering Company, Inc. and The Superheater Company, have merged under the new name of Combustion Engineering-Superheater, Inc.

The original Combustion organization was founded in 1914, its products including Type E, Type H and Coxe stokers. Subsequently it absorbed other manufacturers of fuel burning equipment and several boiler companies, the latter including the manufacturers of Heine, Walsh-Weidner, Casey-Hedges and Ladd boilers.

The Superheater Company was organized in 1910 as the Locomotive Superheater Company, designing and building superheaters for locomotive boilers. Later, it expanded its line of products for locomotives and developed superheaters and other equipment for power plant boilers as well as marine and oil-country boilers.

The two companies became affiliated in 1933, and since then they have felt important advantages could be obtained by merging all operations under a single management. The new company will continue the world-wide activities of the present companies in the manufacture and installation of steam generating and associated products.

Officers of the new company are: Frederic A. Schaff, chairman of the board; Samuel G. Allen, chairman of the executive committee; Joseph V. Santry, president; Martens H. Isenberg, executive vice president; Harold H. Berry, vice president in charge of finance. Vice presidents: Wilbur Armacost, George D. Ellis, Amaziah J. Moses, John S. Skelly, Otto W. Strauss, Donald S. Walker, Albert C. Weigel, Arthur Williams. Irving B. Swigart, secretary and assistant treasurer. Assistant secretaries: Thomas F. Morris and Francis J. Dolan. Assistants to the chairman: Thomas F. Morris and Frank R. Fitzpatrick.

Domestic manufacturing plants owned by the two companies occupy some 115 acres and are located at Monongahela, Pa.; Chattanooga, Tenn.; Chicago; East Chicago, Ind.; and St. Louis. Plants operated by subsidiary companies are located in Canada, England and France.

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R. H. Morse Named President Diesel Engine Association

Robert H. Morse, Jr., vice president in charge of all operations, Fairbanks, Morse & Co., was elected president and treasurer of the Diesel Engine Manufacturers Association at their annual meeting held in Chicago recently.

A. W. McKinney, executive vice president of National Supply Co., and O. H. Fischer, president of The Union Diesel Engine Co., were elected vice presidents.

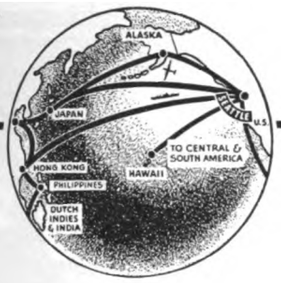
Directors elected were George W. Codrington, vice president of General Motors Corp., and general manager of Cleveland Diesel Engine Division; Perry T. Egbert, vice president in charge of Diesel and locomotive sales, American Locomotive Co.; Robert E. Friend, president of Nordberg Mfg. Co.; Gordon Lefebvre, president of The Cooper-Bessemer Corp.; Walter A. Rentschler, vice president of Lima-Hamilton Corp.; E. J. Schwanhausser, vice president in charge of sales, Worthington Pump & Machinery Corp.; Marvin W. Smith, executive vice president of The Baldwin Locomotive Works; Mr. Morse, Mr. McKinney and Mr. Fischer.

Harvey T. Hill was reappointed executive director of DEMA and enters his fifth year of service at that post.

ROBERT H. MORSE, JR., Vice President, Fairbanks, Morse & Co., newly-elected President of DEMA.



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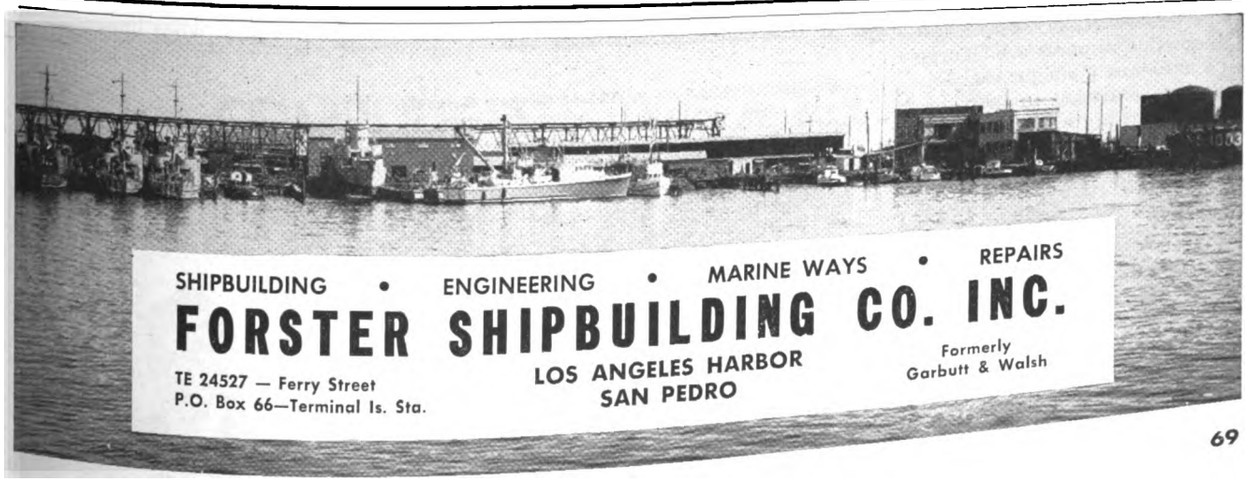
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MANAGER of the marine division of Giampolini & Co., San Francisco painting contractors, is W. O. (BILL) GRAHAM, well-known on that city's waterfront as an experienced marine painting authority. During the war Mr. Graham headed up the marine division of R. P. Paoli & Company, painters and decorators.

The Giampolini company has been in the paint contracting business in San Francisco since 1912. It is located at 1445 Bush Street, telephone ORdway 3-0737, and has a Berkeley branch at 1006 Pardee Street, telephone BErkeley 7-6227.

BARNACLE BOYS GO AIR MINDED . . . Left to right: MATT TROUT, Marine Electric Company, Portland, Oregon; ED MATTHEWS, Assistant Port Engineer, States Steamship Company; RAY STRATTON, Trial Engineer, Northwest Marine Iron Works, Portland. They laugh when time honored subject of engineers as navigators is brought up, with accompanying stories, in the Marelco Plush Room.



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Carrier Marine Service Stations Listed in Directory

The Carrier World-Wide Marine Service Directory, a booklet listing all Carrier Corporation representatives equipped to render marine service, has just been published by Carrier's International Division, Syracuse, New York. Representatives located at or near seaports, as well as the marine department's U.S. service stations are listed by name, street address, telephone number and cable address. The booklet also has been distributed to the chief engineers of the several thousand ocean-going vessels equipped with Carrier air conditioning and refrigeration.

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Marine Department Personnel Changes at Babcock & Wilcox

J. H. King, vice president and executive director of the marine department of The Babcock & Wilcox Company, announced several promotions of personnel in that department.

George H. Hodges has been promoted from assistant to manager of marine department. William M. Firshing, formerly assistant to the manager of the marine department has been transferred to assist Mr. King. Other appointments are George A. Mattucci as assistant manager and Edward L. Boland as assistant to manager, marine department. Calvin H. Lawrence has been appointed the company's marine manager for the Great Lakes District.

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New "3M Line" Products Designed for Marine

A new family of marine adhesives and sealers trademarked "3M Line" Marine Products was recently announced by the Adhesives and Coatings division of Minnesota Mining Manufacturing Co.

The line features a rubber deck seam sealer that is flowed into seams with a caulking gun and which cures to a surface resembling the rubber tread on auto tires.

Recent GE Installations On West Coast Vessels

General Electric MN-1B 10-centimeter radar sets have been installed in California in recent months on a number of vessels, including the Pacific Far East Line's ss PACIFIC BEAR and CHINA BEAR, the Hillcone Steamship Company's tankers TRINITY and SALINAS, the American President Lines' de luxe passenger liners PRESIDENT WILSON and PRESIDENT CLEVELAND and the California Fish and Game Commission's motor patrol vessel ALBACORE. Earlier a set was put on the Pope & Talbot Line's ss P&T SEAFARER.

A new General Electric three-centimeter type radar, the MN-2, was installed on the Union Diesel-powered motor vessel KOMOKU, owned by the Bay & River Navigation Company.

These installations were made by Ets-Hokin & Galvan, San Francisco and Wilmington marine electricians, who are sales and service representatives for the electronics department of the General Electric Company.

Experienced Marine Repair Work Done by Wagner & Niehaus

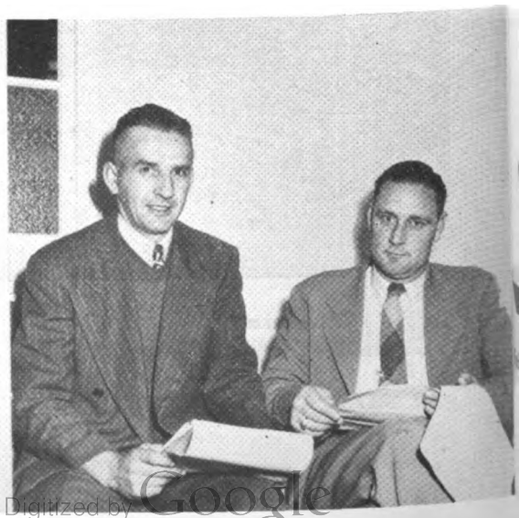
A well-equipped machine shop manned by personnel experienced in all types of marine repair work is offered at San Francisco by Wagner & Niehaus, a five-year old firm headed by Albert H. Wagner and Clarence E. Niehaus, both with long records of shipyard service in that city. Their plant is at 2896 Jones Street, near the Embarcadero, and the phone number is PRospect 5-6161. Formerly they were at 314 Seventh Street.

Included in their shop and service staff of approximately 35 men are well-known marine repair specialists, among them Carl Johnson, shop superintendent; Ed Valencia, outside superintendent; Pete Linom and Harry Swanson, joiner foreman. Mr. Niehaus formerly was a shop foreman for United Engineering Company, San Francisco, and Mr. Wagner was in the estimating department of that same company. Mr. Valencia served his apprenticeship as a marine machinist and later sailed in the engine department of several west coast lines.

CAPTAIN GEORGE L. WALLACE at the new General Electric radar set installed recently by Ets-Hokin & Galvan at San Francisco aboard the Pacific Far East Line's ss PACIFIC BEAR, of which he is master.



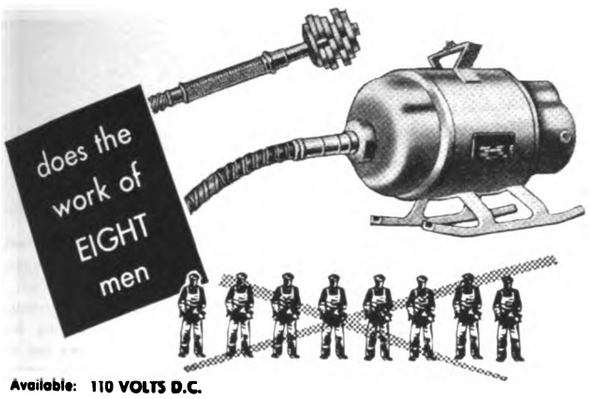
SAN FRANCISCO MARINE REPAIR FIRM . . . Wagner & Niehaus, headed by CLARENCE NIEHAUS, left and AL WAGNER, right.



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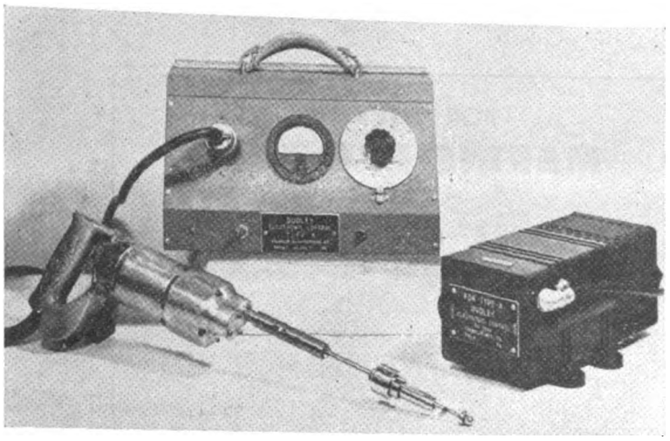
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ELECTRICALLY CONTROLLED TUBE EXPANDER manufactured by Crane Packing Co., Chicago.

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Crane Packing Produces New Electronic Tube Expander

The Crane Packing Company of Chicago has announced an electrically controlled tube expander capable of precision tube expanding even when operated by inexperienced workers. According to the company use of this development, known as the "Dudley Electronic Control," increases the speed of expanding tubes up to 50 per cent in most cases, eliminates tube over-expanding, reduces erosion possibilities, and extends tube life.

The unit, as shown in the illustration, consists of an electronic precision tube expander control, an automatic voltage regulator, the electric expander driving motor, and the precision tube expander. It is reported simple to use, and permits the most inexperienced operator to perform perfect workmanship.

In operation, the "Dudley Electronic Control" automatically turns off the expanding motor at values predetermined for each size and gauge of tube. The company reports this operation results in a uniform minimum amount of expansion on all tubes in the unit, regardless of tube wall tolerance and tube sheet hole size variations. The control, itself, functions automatically, once set for the pre-established value.

Further details may be obtained by writing to the Crane Packing Company, 1800 W. Cuyler Avenue, Chicago 13, Illinois.

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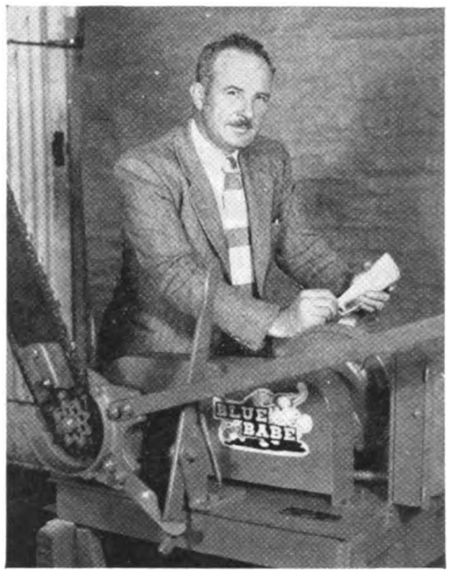
Steelcote Mfg. Announce West Coast Representatives

Marine representatives in the Pacific Northwest and Southern California were named recently by David J. Spieldoch, marine sales manager for Steelcote Manufacturing Company, St. Louis, for his firm's well-known line of deck coatings, shower bulkhead finishes and other rust-resisting paints and finishes. These new sales outlets are Marine Service, Inc., Seattle, and Univeral Specialties Company, Wilmington, Calif. In San Francisco Steelcote is represented by the Paul Koss Supply Company and along the Atlantic coast by Selby, Battersby & Company.

⚓ ⚓ ⚓

Sopac Announces Expansion Into Southern California

Sopac Ship Maintenance, Inc., San Francisco, announced its expansion into the Los Angeles-Long Beach harbor area at a dinner party at Long Beach last month, attended by Southern California steamship and shipyard executives and marine suppliers and their wives. The Southern California office will be at Wilmington and V. C. (Chick) Walker will be in charge. Within the past year and a half Sopac also has opened plants at Mobile, Alabama, and Norfolk, Virginia.



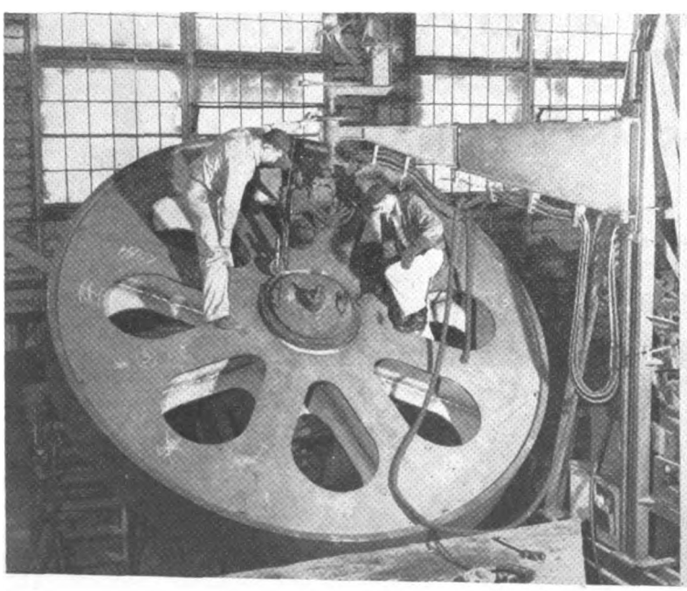
R. G. McMAHON, Executive Assistant, Northwest Marine Iron Works, Portland, Oregon, points out fine points of "Blue Babe" deck saw. Designed by chief engineer Ray Daly and manufactured by company forces primarily for cutting logs to length either in mill pond or on the log deck the new unit also fills a need in marine construction to cut piles and heavy timbers to length, afloat or ashore. One model, built to special order, is built on a swinging base, and is adaptable to cut angles on batter and fender piles.

The machine comes in either gas driven or electric models. Several machines have been shipped abroad to a French firm in West Africa and to the Gold Coast colony in British West Africa.

THE MASSIVE BULL-GEAR wheel shown in these pictures is being fabricated at the Sunnyvale, California works of Westinghouse Electric Corporation to drive the propeller shaft of a large Great Lakes ore carrier being built for the Inland Steel Company by the American Shipbuilding Company at Lorain, Ohio. This is one of two duplicate 7½-ton wheels which will take the full load of 7,000 h.p. from a marine turbine propulsion unit and is the final stage of a series of gears which reduce the high-pressure turbine's 6,000 rpm down to 100 rpm.

Two kinds of steel go into the wheel. The rim is of hard high carbon steel, for it is to be hobbed into 693 fine helical teeth that will stand great pressures under continuous operation. The remainder—hub, center plates and ribs —are made from mild or medium carbon steel.

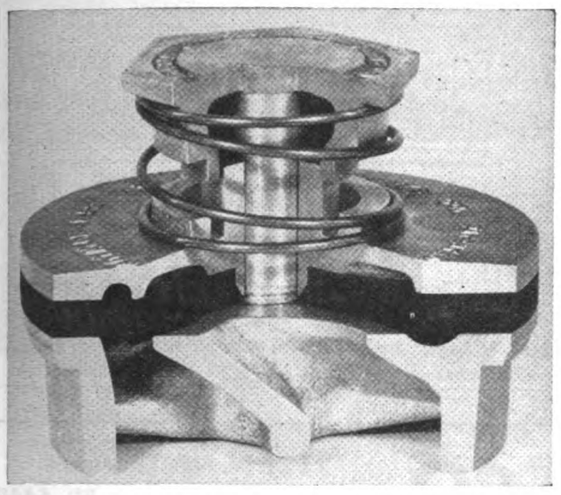
Despite its size and ruggedness, each such gear must be made with microscopic accuracy. When completed and installed in a ship, it must operate free of trouble for many years. Since the slightest inaccuracy in the gear teeth will cause excessive vibration and noise in the ship, inspection is rigid. Any imperfection, however small, will cause rejection. Tolerances for the helical teeth cut in the rim are as close as one ten-thousandth of an inch.





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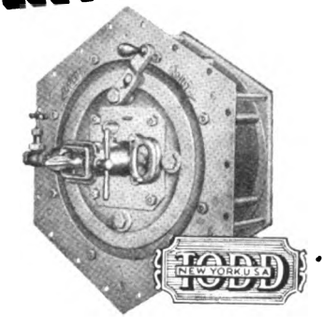
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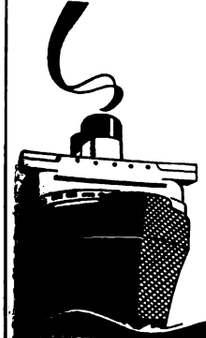
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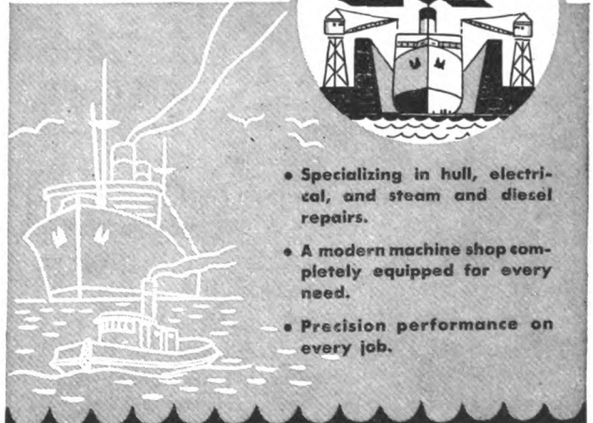
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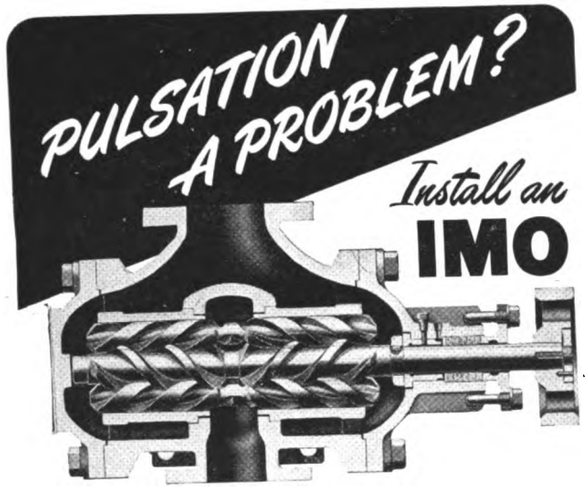
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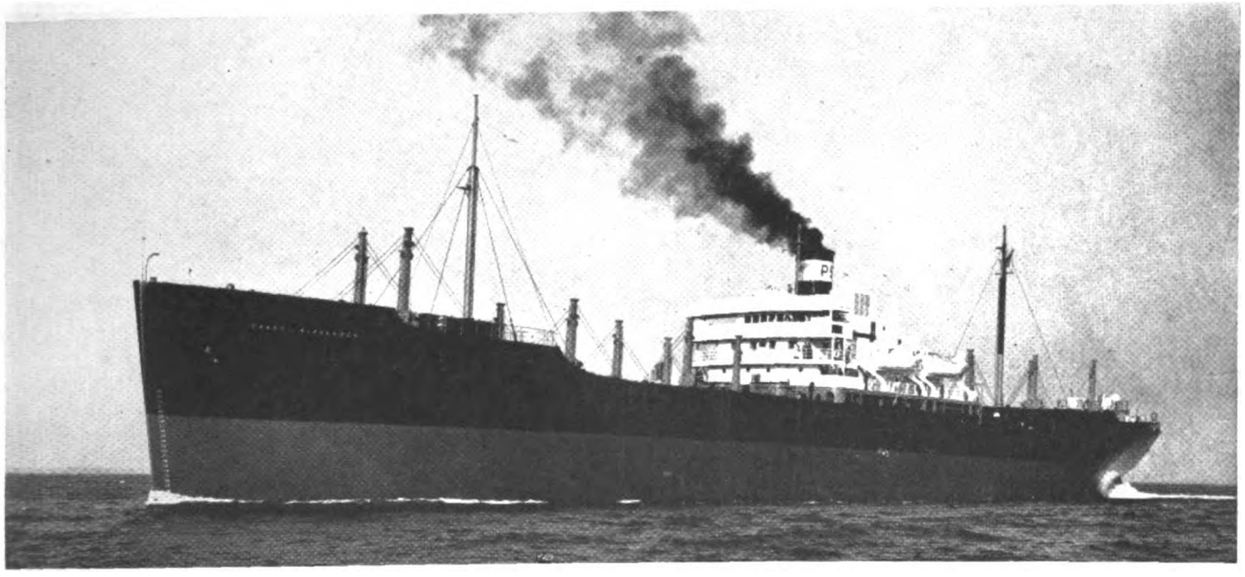
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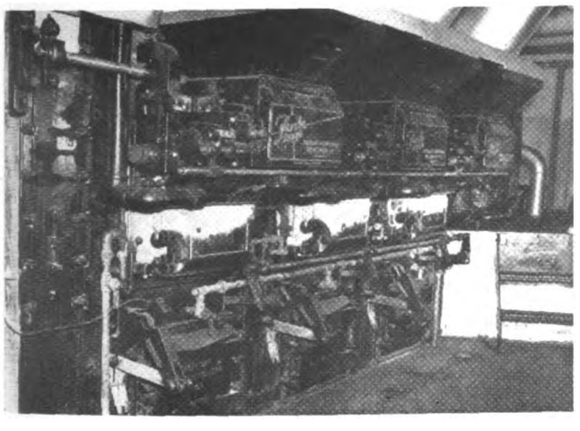
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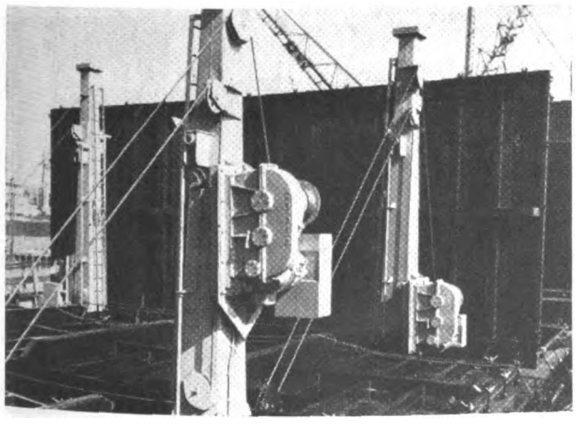
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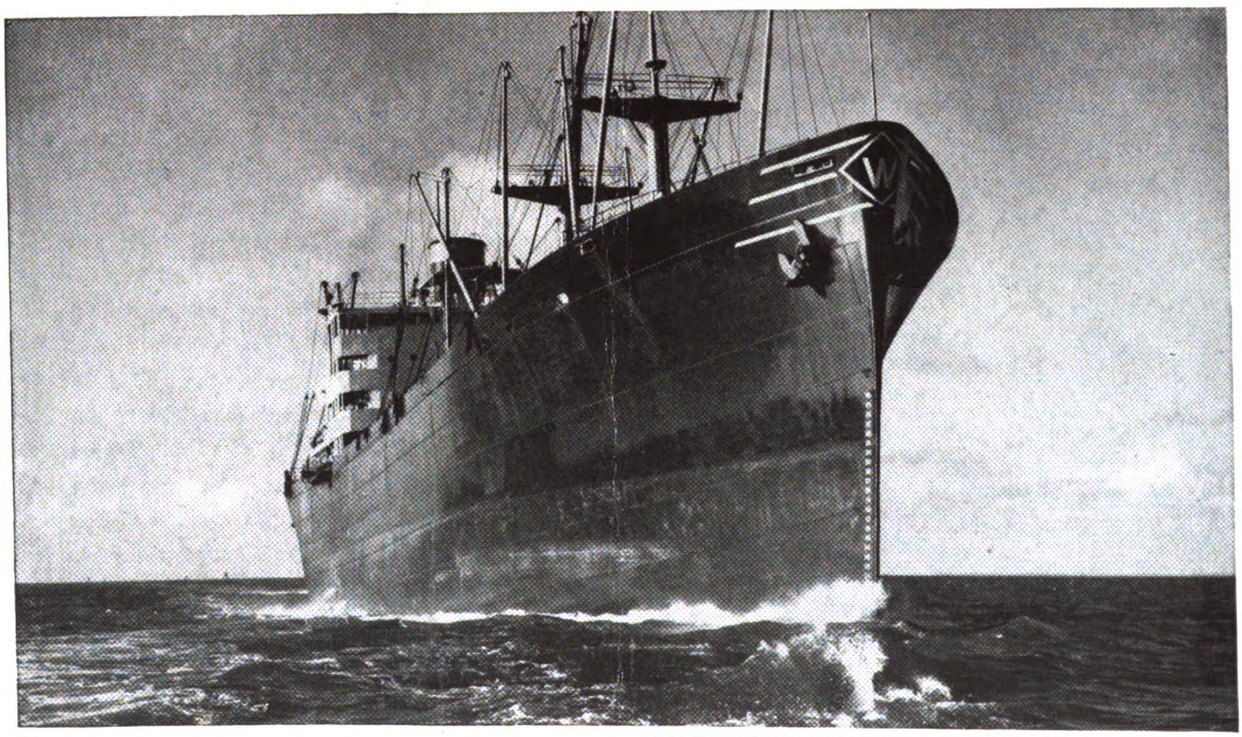
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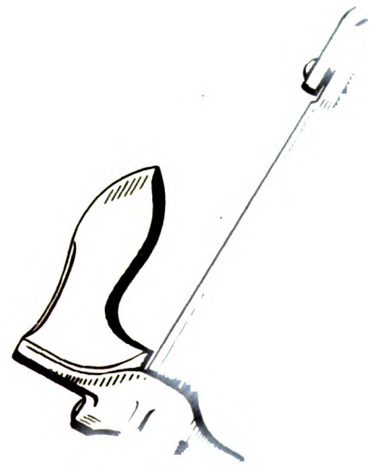
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see page 3

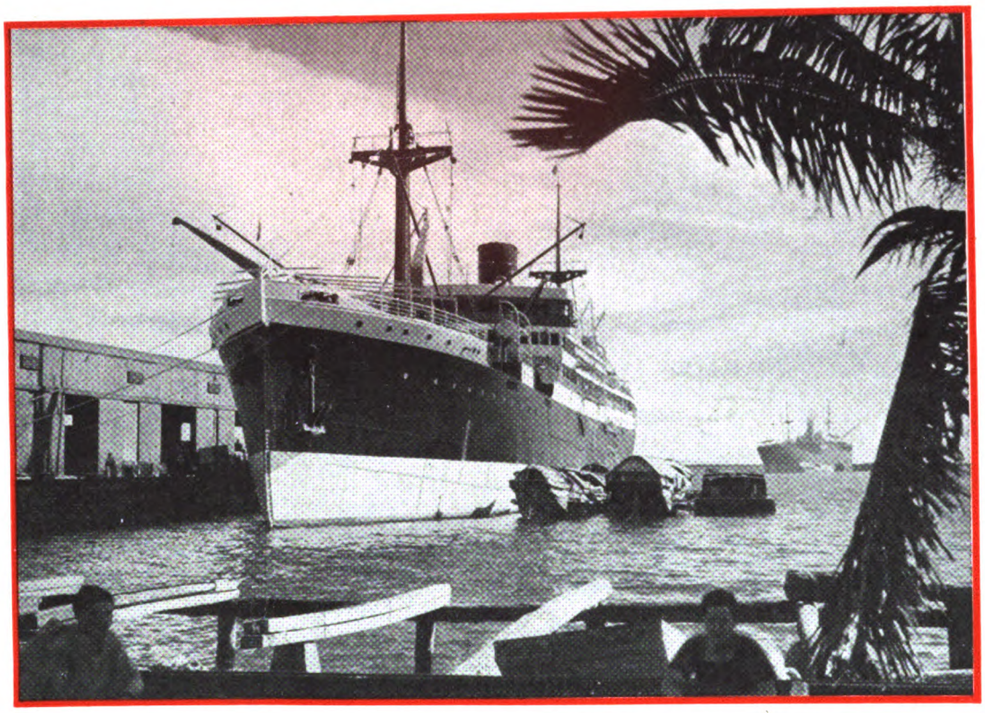
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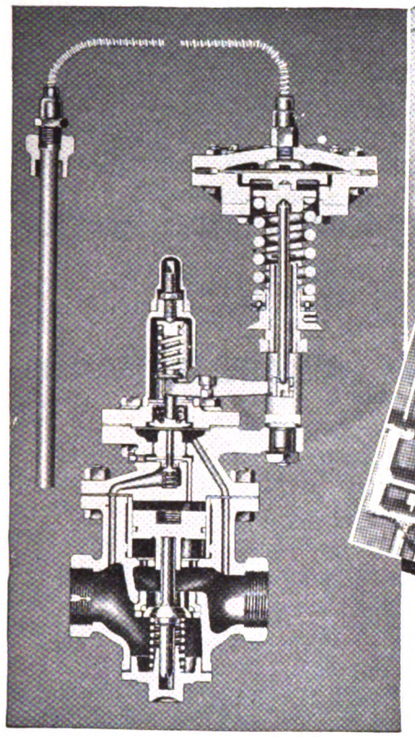
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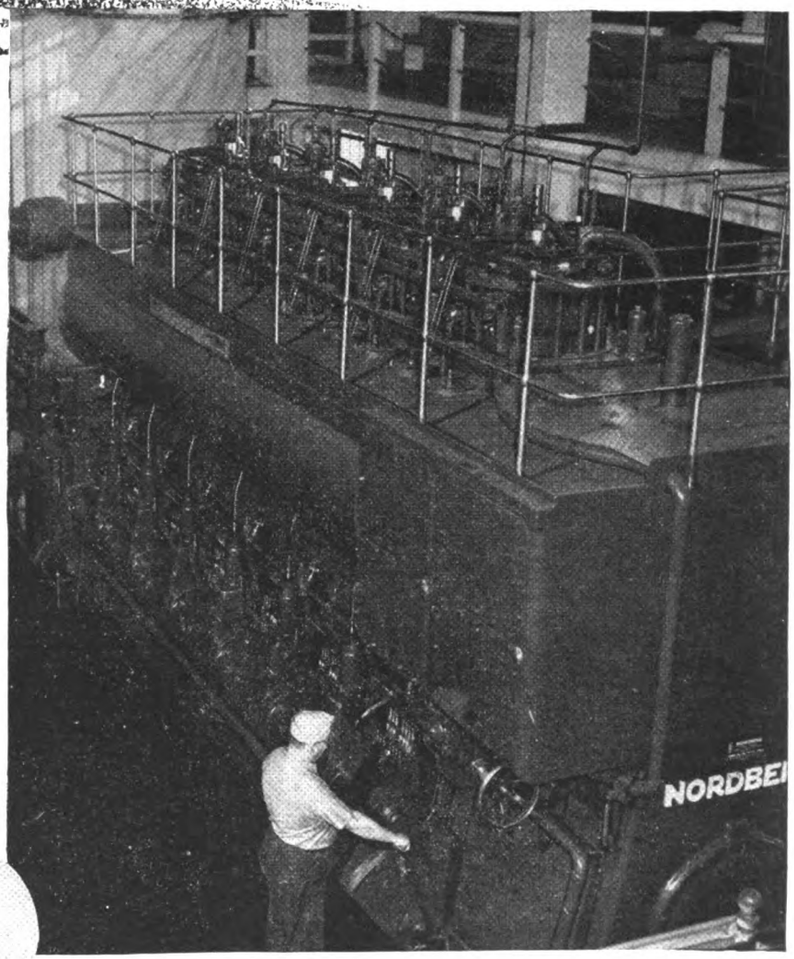
on the ship that never leaves port!

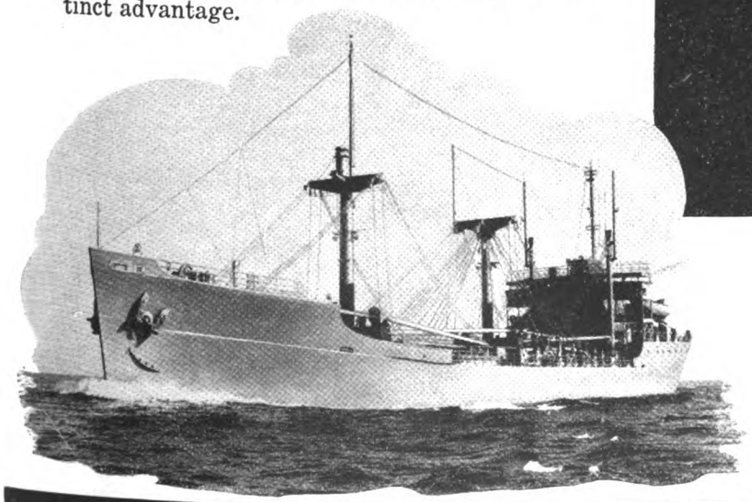




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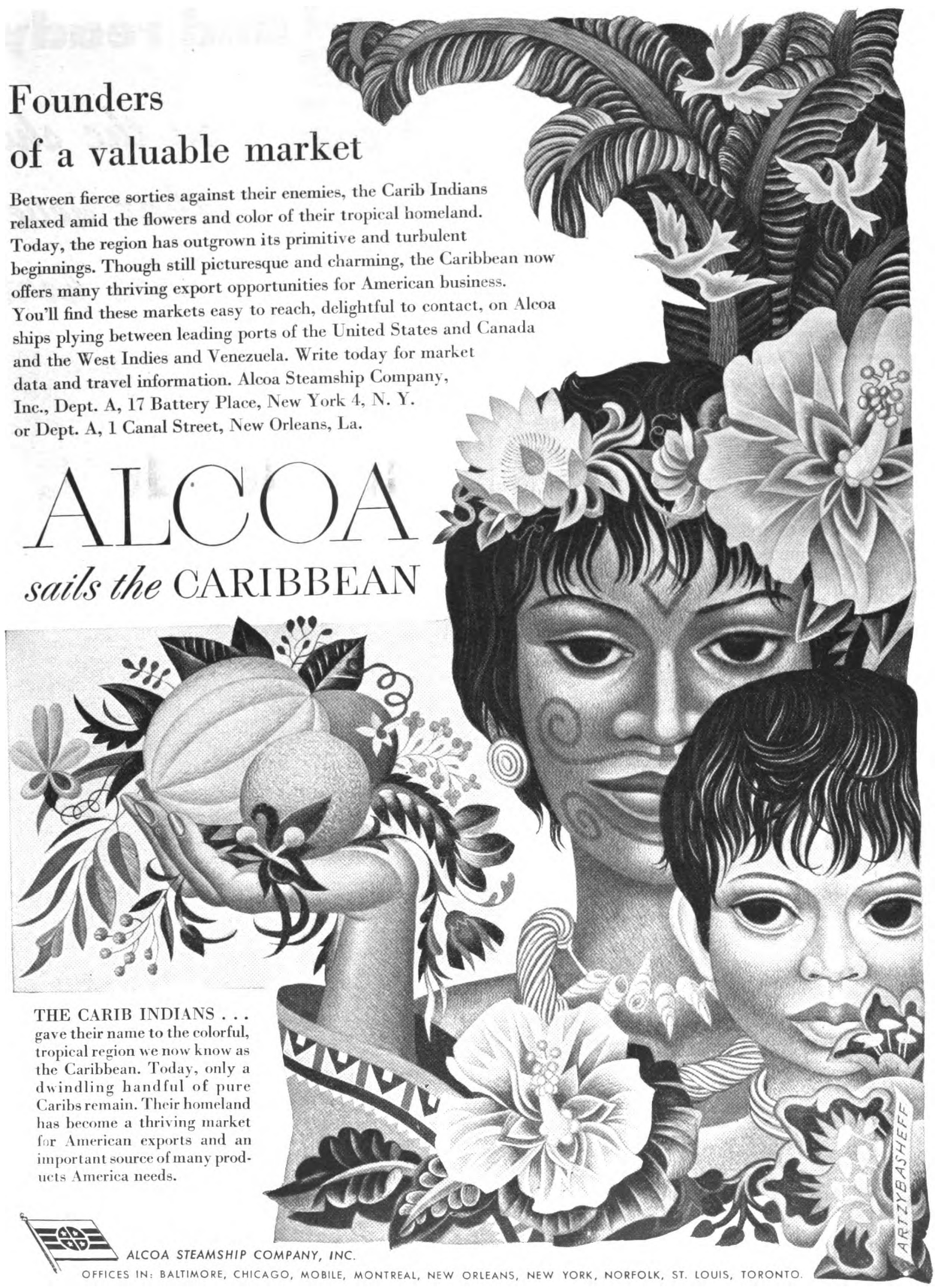
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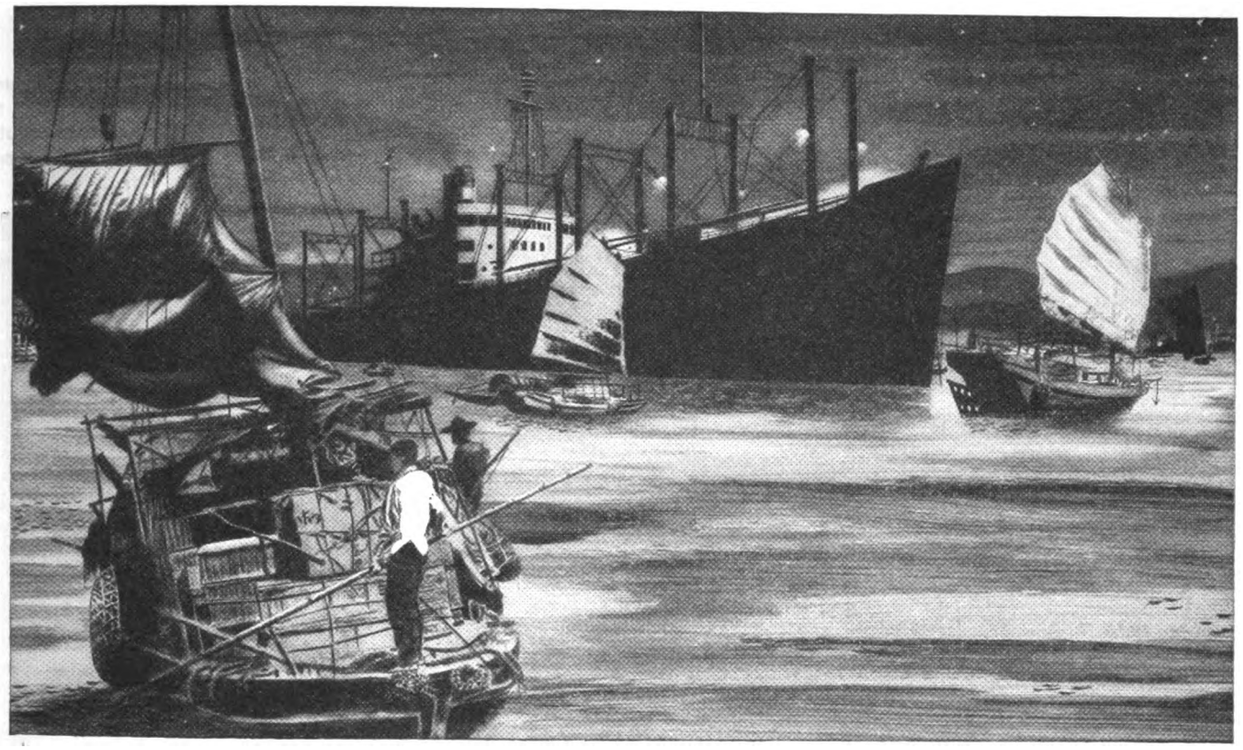
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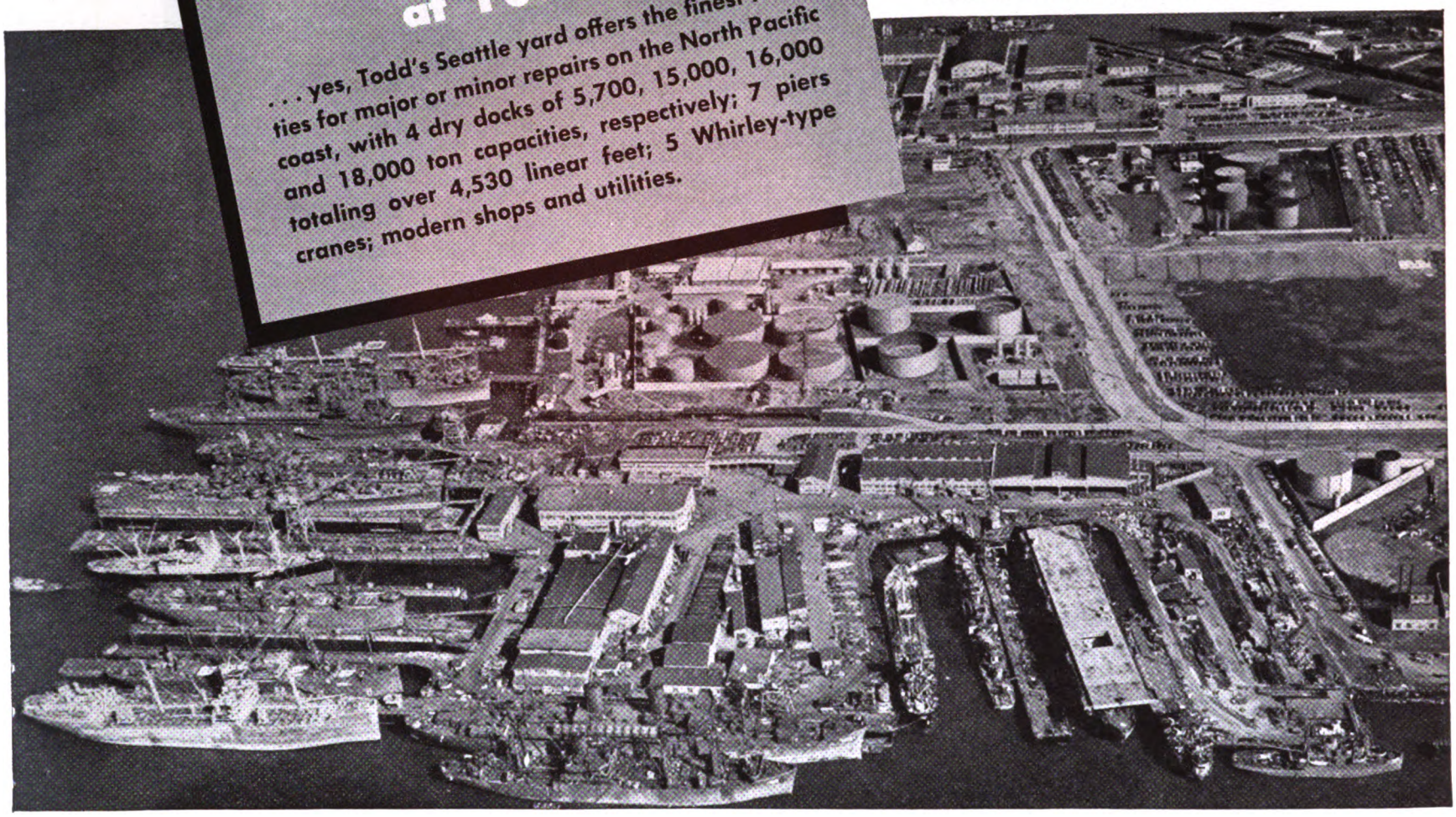
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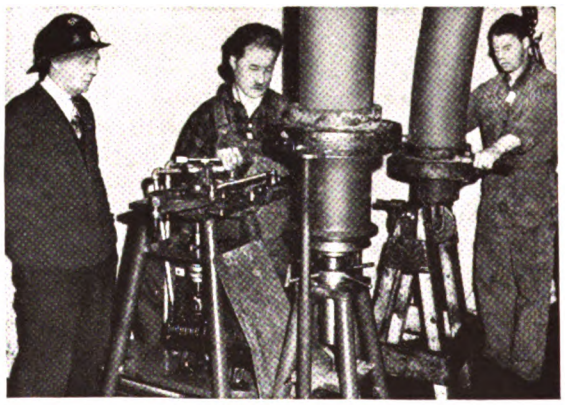
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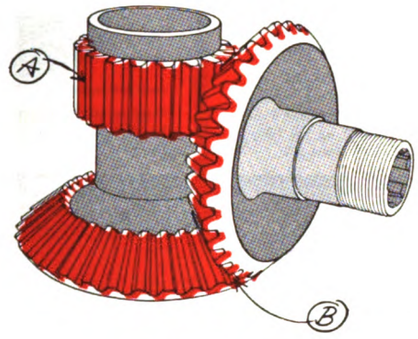
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Case 1104—Keeping Lubricant on Open Drive Gears



OPEN DRIVE GEARS

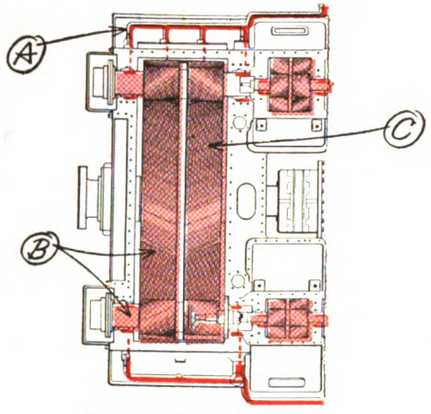
Calol Gear Lubricant did not throw off open drive gears operating at high speeds. Maintaining a constant heavy lubricating film on gear teeth, it reduced noise and wear from the shock loads. Also recommended for the lubrication of wire rope and cable.

A. Extremely adhesive — sticks tenaciously to gear- and pinion-tooth surfaces . . . stays between wires and in hemp centers of wire ropes.

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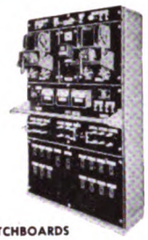
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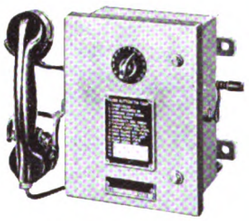
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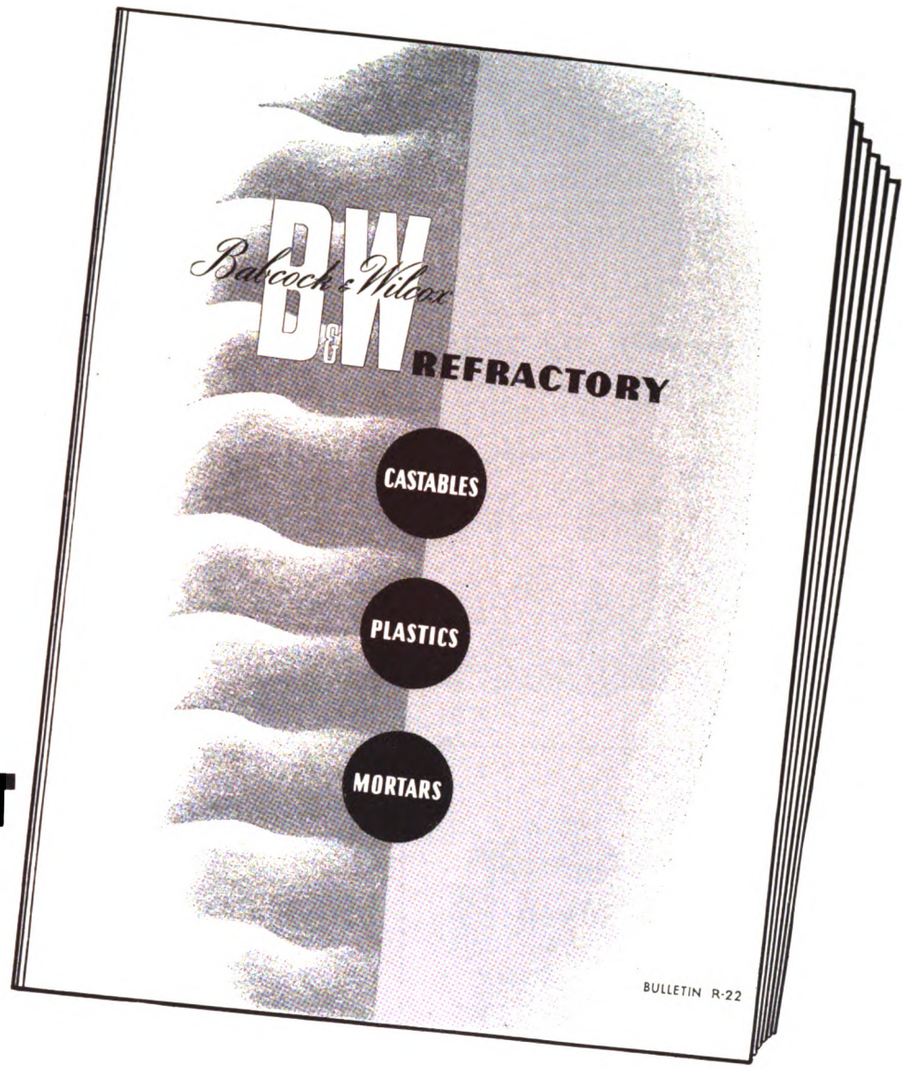
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Furnace designers and builders looking for ways to reduce first cost . . . furnace owners and operators seeking longer furnace life, less maintenance, increased output . . . will all want this convenient bulletin. Your copy of Bulletin R-22 is waiting for you . . . write for it today.

R-346

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First Ours— Now Yours

THE GROWTH OF THREE PUBLIC SERVICES IN MIDDLE AMERICA



IN TRANSPORTATION:

Our original need was ships to move our bananas. Soon it became apparent that the fleet could offer a wider service to the Americas. Today, the Great White Fleet, especially designed for the Caribbean trade, carries thousands of passengers every year between the Americas. Diplomats, educators, industrialists, and vacationists travel on these ships. Thus, with each succeeding year, more and more of the travel public learns more and more about the Americas.



IN MEDICAL SCIENCE:

As workers first cleared jungle swamps along the Caribbean, our medical staffs moved in to battle malaria and yellow fever—to protect the workers' health—and to create sanitary areas of population. This, too, became a public service. ★ ★ ★ Today, United Fruit's medical organization embraces 13 hospitals, 106 dispensaries, 9 domestic medical centers—has a staff of 1,802. In the past year, our facilities and services were available to 200,000 citizens of the Middle American Republics. Significant research contributions have also been made in the field of tropical medicine.



IN COMMUNICATIONS:

As early as 1904, when radio was in its infancy, instantaneous contact between markets, plantations and ships became vital. Therefore, we developed an internal communications system. Inevitably, this system was destined to serve the public interest and, accordingly, the Tropical Radio Telegraph Company was organized. ★ ★ ★ Today, TRT owns or has affiliations with 40 radio-telegraph stations, in addition to those aboard our Great White Fleet, and plays an integral part in trade and cultural relations throughout the Western World.

UNITED FRUIT COMPANY

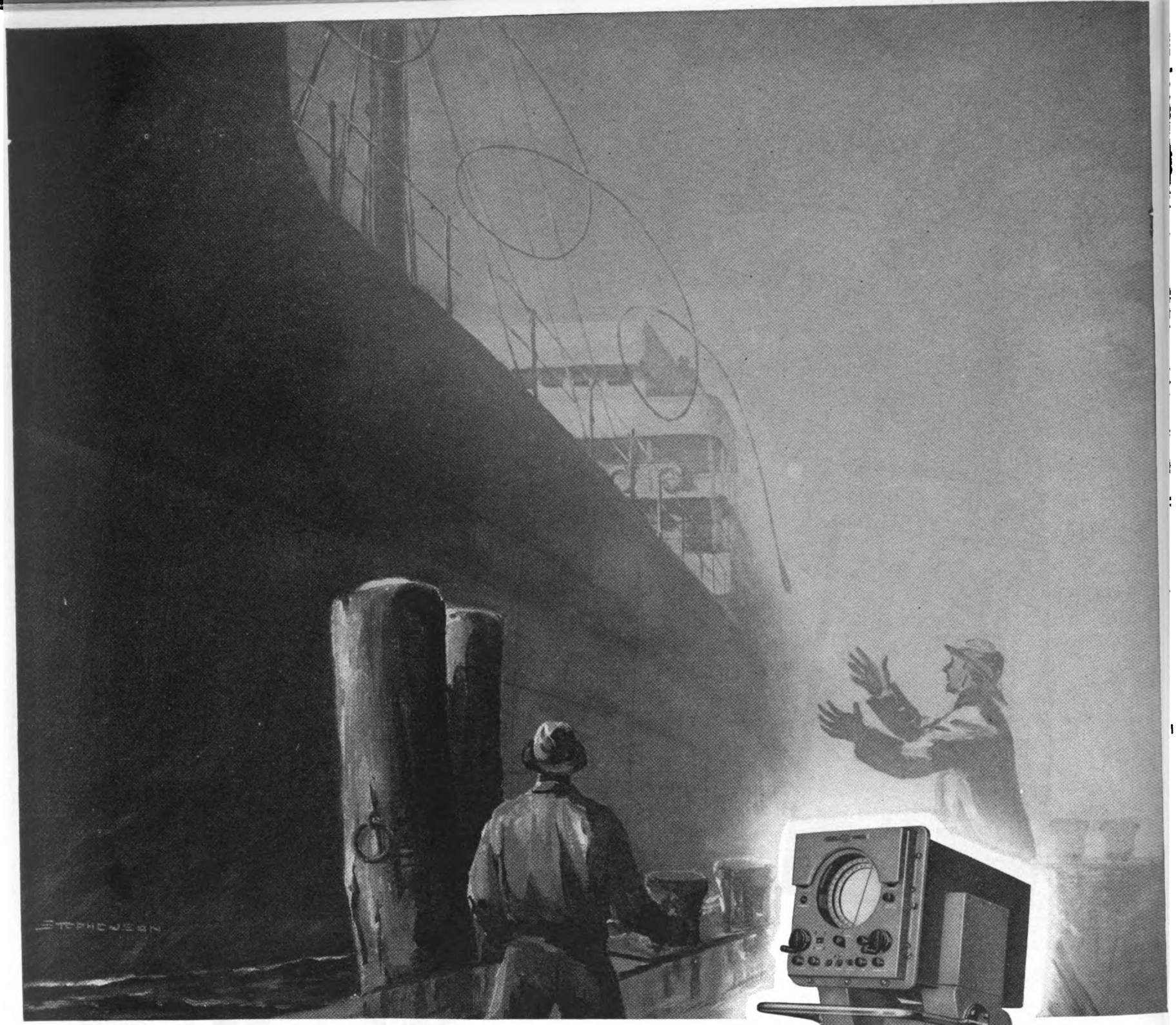
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S. S. VICTOR KELLY

Sails through Ice Field and Makes Port Safely

with MARINERS PATHFINDER* RADAR

Icebergs in the "Icy Straits", Alaska, are always a hazard . . . yet the tanker S. S. Victor Kelly sailed through a field at night and made port safely with the aid of Mariners Pathfinder radar. It was estimated that eight to ten hours were saved by the use of radar. Mariners Pathfinder radar enables this same tanker on its regular run to enter and leave Los Angeles Harbor and San Francisco Bay in pea soup fog while other vessels are anchored.

Regardless of weather conditions, ships equipped with Mariners Pathfinder radar keep on schedule. This electronic lookout sees through space . . . picks out other vessels, shore lines, buoys in fog, rain, sleet and darkness.

Safeguard your ships, crews and cargo, install Mariners Pathfinder on your vessels . . . 10 cm for oceanways, 3 cm for inland waters. Sales and service offices, staffed by radar experts, are located in principal ports.

*"Mariners Pathfinder" is the trademark of the Raytheon Manufacturing Company denoting its commercial search radar.

United States Sales and Service

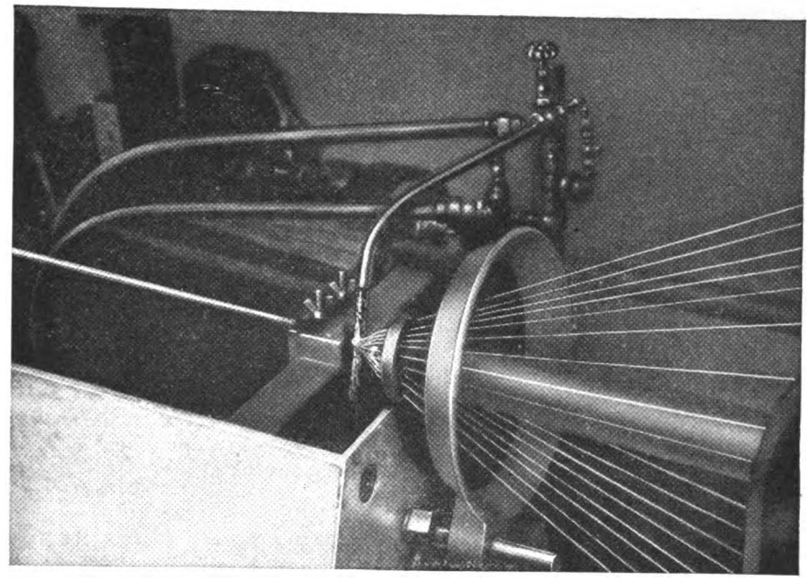
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MARINE RADAR

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Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.



Field lubrication of wire rope does much to prevent friction and corrosion and should not be neglected. However, it is only a *surface* treatment. To provide proper *internal* lubrication, every strand of Wickwire Rope is actually formed in a stream of hot, quick-setting lubricant which packs the many spaces between the wires of the strand.

Fiber cores, too, are saturated with a compound that lubricates the strands after the rope has been put in service. This built-in protection is the result of years of study to develop a lubrication system that would afford protection against factors which bind ropes and result in loss of strength and rope life.

Thorough lubrication is only one step in the quality control of Wickwire Rope manufacture—but we at Wickwire believe that *every* step is important to assure finished rope that will provide the utmost in performance, safety and long life.

Wickwire Distributors and Rope Engineers are always ready to help solve your wire rope problems and supply the right rope for your needs. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

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SHAFT ALLEY Chatter

Naval Architects Appoint Working Committees

John B. Woodward, Jr., president of The Society of Naval Architects and Marine Engineers, has appointed new members to the various working committees of the Society for the year 1949. The committees and their chairmen are as follows:

Applications committee — Richard H. Tingey, assistant technical manager, Bethlehem Steel Company, Shipbuilding Division, Quincy, Massachusetts; awards committee—J. H. King, vice president of The Babcock and Wilcox Company; employment service committee—E. Myron Bull, president of A. H. Bull & Company, Inc.

Endowment fund income committee—William S. Newell, president of Bath Iron Works Corporation, Bath Maine; finance and audit committee—C. W. Middleton of The Babcock & Wilcox Company; local sections committee—John W. Hendry of Bethlehem Steel Company, Shipbuilding Division; membershhip committee—Linn M. Rakestraw of Foster Wheeler Corporation.

Papers committee — Professor Herbert L. Seward of Yale University; publicity committee—Harold M. Wick, assistant to the president of the American Bureau of Shipping; banquet committee—Paul R. Smith, assistant to the general manager, United States Lines, Inc.; dinner dance committee—Harlan M. Scott, publisher of The LOG.

Scholarships committee—Professor W. Selkirk Owen of Webb Institute of Naval Architecture; control committee for the book, "HYDRODYNAMICS IN SHIP DESIGN,"—Captain Roger Williams of Newport News Shipbuilding and Dry Dock Company.

The activities of the Society's important technical and research committee will be guided by a steering committee under the chairmanship of Vice Admiral E. L. Cochrane, USN (Ret.), Head of the Department of Naval Architecture and Marine Engineering and Massachusetts Institute of Technology. Under this steering committee will be three subcommittees, as follows: hydromechanics subcommittee—Dr. Kenneth S. M. Davidson, director of the Experimental Towing Tank at Stevens Institute of Technology, Hoboken; ships' structures subcommittee—Matthew G. Forrest, senior assistant naval architect at Gibbs & Cox, Inc.; ships' machinery subcommittee under Mark L. Ireland, Jr., engineer in the Technical Department of Newport News Shipbuilding and Dry Dock Company.

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American Export Lines Repays Ten-Year Operating Subsidy

Checks for the amount of $5,252,628.66 were delivered by H. M. Gillespie, vice president, secretary treasurer and a director of American Export Lines, to the United States Maritime Commission.

The sum represents repayment in full for the entire amount of operating-differential subsidy received by American Export Lines from the Maritime Commission since January 24, 1938, starting date of a ten-year operating contract under the Merchant Marine Act of 1936. More than 61 percent of this amount represented differential for American seamen's wages.

That contract covered regular scheduled operations of modern, express passenger and cargo steamers between North Atlantic ports of the United States and ports in North Africa, the Mediterranean Sea, Black Sea, and was later extended to include Red Sea, India, Ceylon and Burma.

A provision in the Merchant Marine Act of 1936 requires repayment of operating subsidy by owners whose earnings are sufficient to nullify the need. By good, economical operation, American Export Lines was sufficiently successful to make repayment in full of $5,252,628.66.

Ten years ago, when American Export became one of the first owners to apply for and to receive a contract under the then new Act, the company was in the early stages of a reorganization program.

Today the line is recognized as one of the substantial public American shipping companies, with total assets of approximately $40,000,000, including a fully-paid modern fleet of 24 vessels. This fleet includes 4 modern combination passenger and freight vessels and 20 modern express freighters, all built for its particular trade routes and of approved government design for Naval auxiliary service in the event of any national emergency.

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Lloyd's Register of Shipping reports there is still under construction a large volume of tonnage ordered for countries other than those producing it.

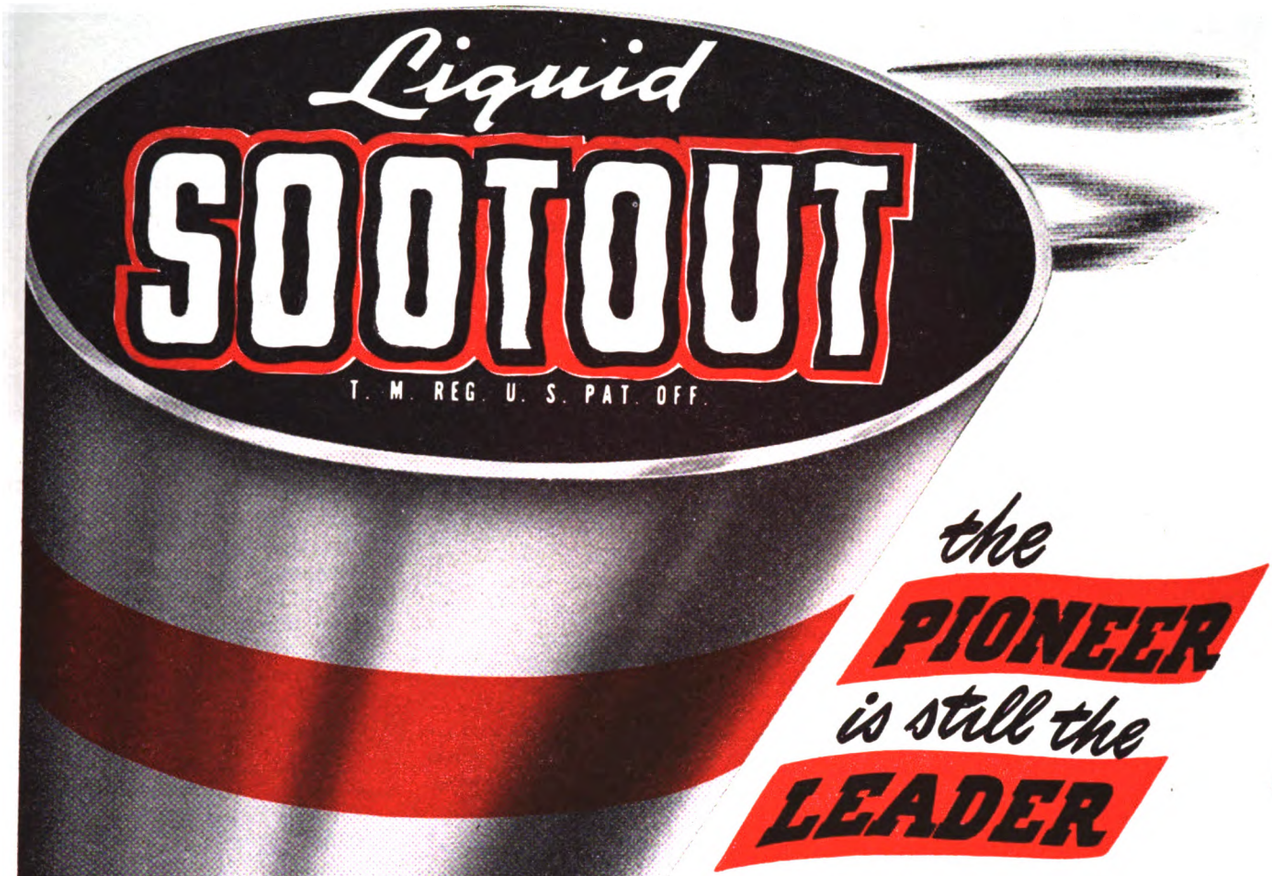
AMERICAN TAXPAYERS RECEIVED A $5,252,628.66 DIVIDEND FROM THEIR MERCHANT MARINE . . . HUGH M. GILLESPIE, right, Vice President, Secretary Treasurer, American Export Lines, Inc., presented to RAYMOND McKEOGH, left, Acting Chairman, United States Maritime Commission checks representing repayment in full of the entire amount of operating-differential subsidy received from the government by American Export Lines, Inc.



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The *Original* Dual Fuel Oil Treatment that gives *Constant Cleaning Action* from Tank to Stack . . .

Liquid SOOTOUT *leadership* has been steadily maintained by *outstandingly superior performance.* It is the modern successor to the old powder type fireside treatments and sludge solvents. Its superiority is recognized generally by marine men *who judge a product on the basis of actual performance.*

Liquid SOOTOUT was the *first* to pioneer in what has become a highly competitive field. *Today,* as in the past, it is providing double cleaning action from tank to stack with *less cost* and *less labor.* It is on this basis of *actual superior performance* that Liquid SOOTOUT has maintained its *leadership over all imitators.*

Double Cleaning Action

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid. When applied to fuel oil in proper proportion, Liquid SOOTOUT disperses condensation and sludge forming elements, and reduces strainer, preheater and nozzle maintenance.

FOR FIRESIDE — Liquid SOOTOUT removes carbon scale and slag in combustion areas. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.



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*Boston, Massachusetts, Howard C. Burke, Inc.
Boston, Massachusetts, Wiggin Terminals, Inc.
Brooklyn, New York, Lehigh Warehouse Corp. of Brooklyn
*Brooklyn, New York, Monitor Machinery Corp.
*Brownsville, Texas, Coast Iron & Machine Works
*Corpus Christi, Texas, Coast Iron & Machine Works
*Galveston, Texas, Galveston Survey Agency
Houston, Texas, Universal Terminal Warehouse Co.
Jacksonville, Florida, Peninsula Warehouse Co.
Los Angeles, California, J. A. Clark Warehouse Co.
Montreal, Quebec, Frederick M. Irvine, Ltd.
New Orleans, Louisiana, Douglas Public Service Corp.
Norfolk, Virginia, F. H. Gaskins, Co.
Norfolk, Virginia, Southgate Storage Co.
*Philadelphia, Pennsylvania, Marine Sales Co.
Philadelphia, Pennsylvania, Terminal Warehouse Co.
Portland, Maine, Galt Block Warehouse Co.
Portland, Oregon, Colonial Warehouse & Transfer Co.
San Francisco, Calif., San Francisco Warehouse Co.
Seattle, Washington, Eyres Transfer & Warehouse Co.
Toronto, Ontario, Frederick M. Irvine, Ltd.
*Vancouver, B.C., H. A. Borgerson, Ltd.

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SHAFT ALLEY (continued) Chatter

George Paine To Supervise Construction New APL Liners

George T. Paine has been appointed American President Lines' representative to supervise construction of the company's three new around-the-world passenger liners, according to George Killion, president of the company.

As supervisor of the new luxury liners, V-2000 type, which are to be constructed at the New York Shipbuilding Corporation yards at Camden, N.J., Mr. Paine comes to his new job with an extensive qualified background in ship construction.

He received his education at Brown University, Harvard and Massachusetts Institute of Technology. As a naval officer in the first World War, he was assigned as construction inspector of destroyers and submarines at Bethlehem Shipyards, San Francisco; later as inspector of merchant ships taken over by the Navy.

Mr. Paine's career included two years of sea duty as an officer on submarines, and from 1931 to 1934 he was assigned to the Office of the Secretary of the Navy. He spent six years as construction superintendent at the Norfolk Naval Shipyard and later he was production officer of the Boston Naval Shipyard, where he supervised all work except planning and design.

While Commander of the Terminal Island Naval Shipyard, from 1945 to 1947, he was also industrial manager for the 11th Naval District. In 1947, at his own request, he retired with the rank of Commodore to enter the commercial field.

American Export Schedules Direct Service to Lisbon

According to John E. Slater, executive vice president American Export Lines, direct express cargo steamship service with regularly scheduled fortnightly sailings will be initiated by American Export Lines between the United States North Atlantic ports and Lisbon, Portugal, and North African ports. The steamship EXTAVIA will make the first voyage in this service since the recent removal of the discrimination against American flag vessels by the Portuguese Government.

The EXTAVIA and sister ships to be employed in the new service are 17 knot American flag vessels. They will load and discharge at Norfolk, Baltimore, Philadelphia, New York, Boston and other North Atlantic ports as cargo is offered. Abroad, the vessels will call first at Lisbon, then at Casablanca, Tangier, Oran and Algiers, Tunis and the west coast of Italy.

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New Officers for the Port Stewards' Association

The Port Stewards' Association of the Pacific Coast has elected the following officers for 1949: president, Eugene Blank, Pope & Talbot; vice president, Al Bissell, Interocean Steamship Corp.; secretary, Gilbert Nelson, Sudden & Christenson; treasurer, Paul Baker, Pacific Transport Lines. The executive committee is comprised of the following: Tom Taylor, Pacific Far East Line; Harry Christensen, Williams, Dimond; and Conn Crimmins, American President Lines.

HAROLD C. HANSON, Seattle Naval Architect, newly-elected chairman of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers.



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PNW Section Naval Architects Hold Annual Election

Meeting at Seattle on February 10 the Pacific Northwest Section, Society of Naval Architects and Marine Engineers, held their annual election and discussed a paper by George Henderson, engineer, Latta Brothers Engineering and Refrigeration Company, titled: "Modern Absorptive Refrigeration on Shipboard."

Harold C. Hanson, Seattle naval architect, was elected unopposed as chairman. Howard E. Lovejoy, port engineer, Puget Sound Freight Lines, was elected vice chairman. Raymond H. Barnes, Todd Shipyards Corporation, was named secretary-treasurer. Charles D. Gillett, Todd Shipyards Corporation, was the successful candidate in the race for three year term on the executive committee.

The retiring chairman, W. H. Watkins, Puget Sound Navy Yard, automatically becomes a member of the executive committee. Holdover members on the committee are J. M. Dyer, Astoria Marine Construction Company, and G. C. Nickum, W. C. Nickum & Sons.

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Captain Joseph Retires From Moore-McCormack

The retirement of Captain Francis Joseph, port captain of Moore-McCormack Lines and well-known New York shipping man was announced by the company.

Captain Joseph joined the staff of Moore-McCormack Lines in 1921 as a third mate and worked his way to master. He commanded several of the company's ships, including the ARGOSY and the SCANMAIL. He was the first master of this latter ship when she was built in 1931 for the Scandinavian trade. Captain Joseph came ashore to be port captain in 1938 and played an important part in the operation of Moore-McCormack Lines during the years of the war when the company operated a large fleet of ships on various trade routes.

HENRI BONNET, left, French Ambassador to the United States, congratulates A. E. HEGEWISCH, President of International House, after presenting to him the French Commercial Merit Award for outstanding service in bettering trade relations. Also presented with the award were SOLON B. TURMAN, second from left, Executive Vice President of Lykes Brothers Steamship Company, and E. S. BINNINGS, President of the New Orleans Board of Port Commissioners. The awards were made at a formal ceremony opening the exhibit, FRANCE COMES TO YOU, in the Roosevelt Hotel, New Orleans.



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SHAFT ALLEY (continued) Chatter





NORTHERN CALIFORNIA SECTION OF THE SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS MEET . . . Left to right: HARVARD P. STEWART, Manager of Marine Sales, Bethlehem Steel, Shipbuilding Division, San Francisco. Fairbanks-Morse men at the meeting—E. A. WILKINSON, Field Service Engineer; J. C. RADFORD, Pacific Coast Representative of the firm's Diesel locomotive division; HARRY G. NAGEL, Manager of the San Francisco branch's Diesel division and speaker of the evening; W. J. PECK, Assistant Diesel Manager; RAY COOPER, new Marine Field Representative at the San Francisco office, and ROGER MURRAY, Manager of the San Francisco branch.

No. California Architects Elect 1949 Officers

Harvard P. Stewart, manager of marine sales of the San Francisco shipyard of the shipbuilding division of the Bethlehem Steel Company, is the new chairman of the Northern California Section of The Society of Naval Architects and Marine Engineers, succeeding Harold P. Champlain, San Francisco, division marine superintendent of the United Fruit Company.

Mr. Stewart was elected at the Section's January meeting, which also chose Sewell A. Knapp, manager of the construction and repair division of the Moore Dry Dock Company, Oakland, as vice chairman, and William A. Baker of the Bethlehem organization as secretary, succeeding Leslie L. White of the staff of M. J. Ryan, naval architect.

New members of the executive committee are John C. Clerico, marine superintendent of the Pope & Talbot Lines, and Captain Hugh E. Haven, shipyard commander of the San Francisco Naval Shipyard. Holdover member of the committee is George L. Crow, manager of the marine department of General Electric Company's San Francisco office.

Morris Weitzner, Bethlehem, was chairman of the nominating committee and serving with him were George E. Swett, marine sales representative; Walter B. Hill, C. C. Moore & Company, Engineers; William B. Warren, American Bureau of Shipping and Robert E. Christy, Todd Shipyards Corporation.

The new officers will be inducted at the next meeting of the Section, to be held March 31 at which a paper on tuna clipper construction will be delivered by James F. Petrich, naval architect, Western Boat Building Company, Tacoma, Wash.

H. G. Nagel, manager of the Diesel department of the San Francisco office of Fairbanks, Morse & Company, was the speaker at the January meeting and discussed his company's Model 38 opposed piston Diesel.

San Francisco's naval architects' group, aided by the Southern California and Pacific Northwest sections, is making elaborate preparations for the 1949 spring meeting of the national society to be held in the Northern California metropolis May 12 and 13. Joseph A. Moore, president of Moore Dry Dock Company, is chairman of the steering committee in charge of arrangements.

Three papers are announced for the spring meeting, which is to be held at the Palace Hotel. They are:

"Reconversion of the ss LURLINE" by Robert Tate, Matson Navigation Company, San Francisco.

"The Automatic Steering of Ships by Proportional Control," by Professor L. U. Schiff of the department of physics of Stanford University, and Marvin Gimprich, Experimental Towing Tank, Stevens Institute of Technology, Hoboken, N.J.

"Fire Fighting on Shipboard" by Captain H. S. Burke, USN (ret.) C-O-Two Fire Equipment Company, Newark, N.J.

Shipbuilders, ship operators and marine equipment manufacturers from all sections of the nation, are expected to attend the San Francisco meeting. The program includes technical sessions, receptions, an informal dinner and sightseeing tours. A special train to carry members from the Atlantic and Central states is contemplated.

Jimison Made Officer of Seamen's Town House

New vice president of the Seamen's Town House in New Orleans is E. A. Jimison, vice president and manager of the marine division of Lykes Bros.

Harold A. Johnson, executive director of the Town House, said that occupancy has been 100 per cent since the new building was opened August 31. During the same time, seamen deposited $27,-490.69 for safe-keeping and transmission to their families. Forty-seven dances, games, movies and recitals have been presented for 6,796 people, and 3,505 pieces of mail were received for seamen.

A total of 17,162 seamen have made use of the Town House's services since August 31.

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Texas Transport Names Two New Officials

Robert E. Stackpole has been appointed traffic manager and R. B. Sigerson operations manager of the New Orleans office of the Texas Transport and Terminal Company Inc.

Mr. Stackpole was formerly with the Kerr Steamship Company for 28 years.

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New Officers Elected by San Francisco Marine Exchange

Fred B. Galbreath, manager, Pacific Department, Marine Office of America, was today elected president of the Marine Exchange of the Port of San Francisco Bay, according to an announcement by M. A. Cremer, Exchange manager.

Other officers elected were: for first vice president, Harmon K. Howard, secretary, Howard Terminal; second vice president, Raymond V. Winquist, vice president in charge of traffic, General Steamship Corp., Ltd.; third vice president, Gerald A. Dundon, vice president and general manager, Pope and Talbot, Inc.; treasurer, Robert H. Wylie, port manager, Board of State Harbor Commissioners.

In addition to the officers, it was announced there has been elected to the board of directors, Allen E. Charles, A. W. Gatov, J. Harding Jensen, John Kilpatrick, Joseph A. Moore, Jr. and H. J. Wilson.

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Essay Contest Sponsored By Portland Propeller Club

High school students in Portland, Astoria, Coos Bay and Oregon port cities are being invited by the Propeller Club, Port of Portland, to participate in an essay contest on the subject "Why American Ships Are Essential to Our Nation's Continued Prosperity."

Prizes offered include ocean voyages from Portland to San Francisco and Vancouver, British Columbia, and trips on the Columbia river. The teacher of the winner of first prize will receive a United States savings bond.

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SHAFT ALLEY (continued) Chatter



VINCENT E. FOELL, newly-appointed assistant general superintendent of Commercial Ship Repair, Inc., at San Francisco. Mr. Foell, a charter member of The Society of Port Engineers, San Francisco, formerly was port engineer in that city for the United States Lines and Coastwise Line. Commercial Ship recently moved its San Francisco plant from Bay and Taylor Street to a large new building at 1401 Illinois Street, corner of 24th Street. Their telephone number is now Mission 7-4520.

Arrow Line Schedules Service From Florida to West Coast

Arrow Line will establish direct freight service between Jacksonville, Florida and West Coast ports early this month, according to the company. Arrow Line, now operating intercoastal service between Atlantic Coast ports and West Coast ports, are scheduling the first intercoastal service from this Florida city since before the war.

The first Arrow Line vessel to inaugurate the service from Jacksonville will be the ss MONROE VICTORY, a 10,700 ton Victory ship especially equipped to serve the intercoastal trade.

Schedule stops on the West Coast will be made at Los Angeles, San Francisco and Seattle. Transit time between Jacksonville and the West Coast, via the Panama Canal, will be 12 days.

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Edward A. Roberts Awarded For Outstanding Civic Work

"Man of the Year" in Mobile is Edward A. Roberts, chairman of the Waterman Steamship Corporation board of directors. Roberts, who also is chairman of the Mobile City Planning Commission, was awarded the Bienville plaque for outstanding civic work during 1948. Presentation of the plaque and a citation was made by Mayor Ernest Megginson.

The selection was made by a committee composed of representatives of Mobile's civic, professional, religious, social, governmental and charitable organizations, with Wilbert Jordan as chairman.

Those who nominated Roberts gave as their reasons his achievements and work in connection with the activities of the Mobile city financing commission as well as his general efforts to build a greater and more progressive Mobile and his willingness to assist charitable projects.

Pan-Atlantic Resumes Coastwise Passenger Service

For the first time since before the war passengers are now arriving in New Orleans via ship from Atlantic Coast Ports aboard Pan-Atlantic Steamship Corporation's fleet of modified 10,600-ton, C-2 type freighters. These new faster cargo vessels placed in service on the scheduled ten-day voyage with stops at Philadelphia, Baltimore, Miami and Tampa, replace Pan-Atlantic's fleet of Liberty ships.

Pan-Atlantic Steamship Corporation, a wholly owned subsidiary of the Waterman Steamship Corporation, started coastwise ship service in 1933 and continued regular service from Atlantic Coast Ports to New Orleans and Mobile until 1941, when all privately owned vessels in that trade were requisitioned for use by the War Shipping Administration. Pan-Atlantic resumed post-war service in this trade in July, 1946, as agent for the W.S.A., and in November, 1946, instituted a private service with ships chartered from the U. S. Maritime Commission, which service has continued to the present time. Officials stated that the placing of the C-2 type freighters in the trade are the first privately owned ships, with passenger accommodations, to resume coastwise operations since the cessation of hostilities.

Pan-Atlantic spokesmen pointed out the new C-2 vessels have been specially equipped for the coastwise trade, having numerous deck compartments and special large lockers for the carriage of express cargo and less than carload quantities of freight. In addition, the ships are fitted with a mechanical ventilation system in their three cargo decks.

The new vessels in this trade now reduce sailing time from New York to New Orleans from fourteen (14) days to ten (10) days.

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Portland Marine Groups Elect New Officers

The Portland Steamship Operators have elected A. C. Nielson, district manager of the Interocean Steamship Corporation, president for 1949.

L. R. Gault, president of Western Transportation Company, has been named board chairman of the Columbia Basin Operators.

New chairman of the board of the Columbia River Tariff Bureau is Captain Homer T. Shaver, manager of the Shaver Transportation Company.

Captain James A. Hazelwood has been elected president of the Portland Merchants Exchange. Following 33 years service with American-Hawaiian Steamship Company with time out during the war when he served as colonel in overseas service. Captain Hazelwood has taken the position of superintendent of operation with the Commission of Public Docks, Portland, a newly created position.

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Coast District Officers Named by PASSA

Pacific American Steamship Association, which comprises the 14 major American flag steamship companies operating on the Pacific Coast re-elected Albert W. Gatov president of the association.

New San Francisco vice presidents of the association are Vincent P. McMurdo, Pacific coast manager of the Luckenbach Steamship Company and Maitland S. Pennington, vice president of the Pacific Transport Lines.

Henrietta T. Smith, San Francisco, was re-elected Association secretary-treasurer.

A. R. Lintner, president of the American Mail Line, was re-elected as PASSA vice president for the Seattle-Puget Sound area.

Hillman Lueddemann, Pope & Talbot vice president, was re-elected as vice president of the steamship group for the Columbia River area.

Matson Navigation Company's vice president Ralph J. Chandler was elected again as vice president in the Los Angeles-Long Beach area.

Serving on the advisory board will be T. E. Cuffe, president of Pacific Far East Line; John E. Cushing, president, Matson Navigation Co.; George Killion, president, American President Lines; A. R. Lintner; R. A. McLaren, president, Pacific Transport Line; George A. Pope, Jr., president, Pope & Talbot; W. T. Sexton, president, Coastwise Line.

ALBERT W. GATOV, re-elected President of Pacific American Steamship Association.



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Fast Service in Tight Spots



It's one thing to talk Service but quite another to get material on the job – but fast – when an emergency occurs. So, let's get right down to cases.

Case 1. Here's a company that phoned in an order for boiler tubes – a large number of various sizes – at 3:30 one afternoon. They needed these "pronto." How soon could we have them ready for their truck to pick up? Well, we had the tubes all right, but some had to be bent to specifications. We bent 'em – they picked 'em up, and the tubes were on the job – 200 miles away – by midnight the same day.

Case 2. A shipping broker phoned in an order for 22 bent tubes and 2 straight tubes for a ship docked at Newport News. No need for emergency delivery was mentioned. The next day—Saturday—one of our men got a call at his home, telling of need for immediate action. Two phone calls and the warehouse and maintenance men were on the way to the warehouse. Enroute they arranged for a truck which met them at the warehouse and loaded the material from stock. Delivery was made the same day at Newport News. No – it wasn't the least expensive way to do the job – but in the emergency it sure was fast.

Case 3. A Norwegian ship at sea notified the owners that 20 boiler tubes were urgently required for safe ending; also a certified welder to assure proper installation. The ship was due in Kingston, Jamaica, B.W.I., the next day. Owners cabled details to C-E. The welder left the C-E shop at Chattanooga by plane the same day (November 24th)—so did the tubes. The welder arrived the next day (Thanksgiving Day)—tubes on the 26th. The welder was back in Chattanooga on December 1st – mission completed – ship on its way.

Unusual cases? Of course they are. But the point is that Combustion recognizes that emergencies can and do occur, and is ready to make every effort to meet them. Five shops, four warehouses and fifteen offices strategically located to serve the East, West and Gulf coasts and the Great Lakes area – some with 24-hour service – are the C-E answer to SERVICE – *when* and *where* you need it. C-E Service Engineers will be pleased to consult with you at any time.

B-287

Combustion Engineering - Superheater, Inc.

A Merger of COMBUSTION ENGINEERING COMPANY, INC. and THE SUPERHEATER COMPANY

200 Madison Avenue, New York 16, N. Y.

Pacific Coast: P. L. Johnson Co., Monadock Bldg., San Francisco, and Petroleum Bldg., Los Angeles

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STRIKEBOUND CARGOES DELIGHT SHIPPERS

MOORE-McCORMACK LINES, INC.
PACIFIC REPUBLICS LINE

140 CALIFORNIA STREET

SAN FRANCISCO 11, CALIFORNIA

CABLE ADDRESS: MOOREMACK TELEPHONE: GARFIELD 7121

AMERICAN REPUBLICS LINE

BUENOS AIRES, MONTEVIDEO, RIO GRANDE DO SUL, SANTOS, SAO PAULO, ANGRA, RIO DE JANEIRO, BAHIA, PERNAMBUCO, CEARA, MARANHAO, PARA, BARBADOS, TRINIDAD, CURACAO, BARRANQUILLA, CRISTOBAL

FRANCISCO, ANGELES, TLAND, OREGON, TTLE, COUVER, B. C., Y YORK, LADELPHIA, ROCHESTER, BALTIMORE, BOSTON, DETROIT, PITTSBURGH, CHICAGO

MERICAN SCANTIC LINE

December 21, 1948

To Green Coffee Receivers:

As you no doubt well know our SS MORMACLAND has just recently completed her discharge of Brazil Green Coffee at Los Angeles and San Francisco, after having been strikebound in Los Angeles Harbor since September 9, 1948.

All reports to date show the out-turn condition of the coffee, as well as other cargoes, to be excellent. We feel that you should be acquainted with the fact that this vessel is equipped with "Cargocaire" and that through continued operation of this system while the vessel was strikebound we were able to maintain perfect hold conditions for the duration of the strike, which in turn afforded all cargo the best of care through the elimination of any excess moisture, which otherwise would have arisen throughout the vessel.

"Cargocaire" systems are the latest in modern cargo vessel equipment that further safeguard your cargo while afloat. We are proud to be counted in the group of American Flag Lines using this modern equipment. We trust that you, too, will appreciate and avail yourself of the vessels so equipped.

Very truly yours,

MOORE-McCORMACK LINES, INC.

H. K. GRADY
Western Freight Traffic Manager

HKG:as

MORE THAN THREE MONTHS ABOARD THIS STRIKEBOUND VESSEL, yet the cargo was unloaded in excellent condition. A dramatic example that CARGOCAIRE protection delights shippers.

Every day, at sea or in port, CARGOCAIRE protects cargoes from sweat damage aboard 149 ships of 26 steamship lines.

MACK LINES, INC.
PUBLICS LINE

RNIA STREET

11, CALIFORNIA

BUENOS AIRES, MONTEVIDEO, RIO GRANDE DO SUL, SANTOS - SAO PAULO, ANGRA, RIO DE JANEIRO, BAHIA, PERNAMBUCO, CEARA, MARANHAO, PARA, BARBADOS, TRINIDAD, CURACAO, BARRANQUIL, CRISTOBAL

TELEPHONE: GARFIELD 1-7121

AMERICAN REPUBLICS LI

January 10, 1949

ction

Dear Mr. Dake: In re: SS MORMACLAND

Pursuant to our conversation of last Thursday I am pleased to advise that the following cargo was on the above vessel for the duration of the strike:

Green coffee in bags	2750 tons
Canned goods	160 tons
Casein in bags	15 tons
Cocoa beans in bags	109 tons
Beef casings in drums	14 tons
Lard in cases	17 tons
Pickled skins in barrels	30 tons
Castor beans in bags	304 tons
Tankage in bags	100 tons
Fish meal in bags	100 tons
Brazil nuts in bulk	230 tons
Brazil nuts in cases	50 tons

Very truly yours,

MOORE-McCORMACK LINES, INC.

H. K. GRADY
Western Freight Traffic Manager

On other trade routes serving Pacific Coast ports, the following steamship lines can give your cargo CARGOCAIRE protection:

American President Lines • American-Hawaiian Steamship Co. • Calmar Steamship Corp. • Furness, Withy & Co., Ltd. • Grace Line • Luckenbach Steamship Co., Inc. • Moller Line, U.K., Ltd. • Waterman Steamship Corp.

CARGOCAIRE Engineering Corp.

15 PARK ROW, NEW YORK 7, N. Y.
417 MARKET ST., SAN FRANCISCO 5, CALIF.

Upon learning of Moore-McCormack's letter, CARGOCAIRE requested the above cargo list.

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the LOG
OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

MARCH, 1949 Vol. 44, No. 3

Official Organ of The Society of Marine Port Engineers, New York, N.Y., Inc.; The Society of Port Engineers, San Francisco; The Society of Port Engineers, Los Angeles; The Society of Port Engineers, Columbia River Area; The Society of Port Engineers of Puget Sound; the Port Stewards' Association of the Pacific Coast.

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San Francisco

Luckenbach Awards $6,000,000 In Contracts for Conversions

Luckenbach Steamship Company announces plans for immediate, extensive conversion, at a cost approximating $6,000,000, of eight C-3 type vessels recently purchased from the United States Maritime Commission.

Work on seven of the vessels will be done by Pacific Coast shipyards, and the job on the eighth, the ss LAMAR, totalling more than $900,000, is already under way at The Maryland Dry Dock Company shipyard at Baltimore, Maryland.

Early in February two of the western contracts had been let to the Todd Shipyards Corporation, Seattle yard, one for the ss SEA STAR for $586,000 and the other for the ss SEA FLYER for $653,000.

Low bidders on the remaining five were: SEA BARB, Willamette Iron & Steel Co., Portland; SEA RUNNER, Todd-Seattle; SEA CAT, Consolidated Builders, Inc., Swan Island, Portland; and the SEA DEVIL and SEA BASS, Moore Dry Dock Company, Oakland.

Overhauling all machinery is planned with new Carrier refrigeration units, Coffin feed pumps and other equipment going aboard. Six of the vessels need new tail shafts.

Passenger quarters are to be enlarged and improved on the vessels, with Johns-Manville marinite being used for joiner work and Kearfott windows replacing airports.

Six of the vessels are powered by General Electric turbines and the other two by Westinghouse main propulsion units. Two are equipped with Babcock & Wilcox boilers, four with Combustion Engineering steam units and two by Foster-Wheeler. The LAMAR and SEA STAR were built by the Ingalls yard at Pascagoula, Mississippi, and the other six by Western Pipe & Steel at South San Francisco, California.

Vincent P. McMurdo, Pacific Coast manager for Luckenbach, will be in charge of the West Coast work, with E. S. Ramey, superintending engineer, directing engineering details. James Sinclair, New York, president and general manager of the company, has general charge of the program. M. J. Ryan, San Francisco, is the surveyor and naval architect.

These eight vessels will give Luckenbach a fleet of sixteen vessels for the intercoastal trade, five C-2's and eleven C-3's. All will be given names of members of the Luckenbach family.

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WEA Takes Steps to Improve Maritime Labor Relations

With the appointment of two new committees the directors of the Waterfront Employers Association of the Pacific Coast have taken preliminary steps in long range management planning for improvement of West Coast maritime labor relations.

A five man administrative committee will implement membership labor policy under the new longshore contract. It will perform liaison between directors and WEA staff in applying the new contract to the job.

A committee on organization, budget and finance, manned by representatives of seven steamship lines, will review the entire organizational and operating structure of WEA. Following its study, recommendations will be made to the membership for a long range plan including organization and functions of WEA offices maintained in the four major coast cities. Finance and budget recommendations will also be included in the committee report.

"The work of the Administrative Committee is based on our belief that closer labor relations are better labor relations," a joint committee statement said.

"Already, under the contract, we have made an improvement in this regard. Under previous contracts, the member companies participated to a minimum in the activities of the labor relations committees. Staff was required to make on-the-spot, day-to-day decisions in which direct employers should have participated to a greater degree. These committees are now staffed by actual employers, who serve for a full year. Meetings are attended by direct employers, with staff assisting them. This change is no criticism of the job performed by staff members under the old system. It is simply an improvement in method.

"The administrative committee will mean a continually available group of principals, responsible for implementing membership policy through this Association."

Respecting the organizational committee, the statement said:

"We are making a complete review of our Association structure to determine whether we are geared for maximum effectiveness in the promotion of good labor relations. The review will cover the functions of our staff and various committees."

Chairman of the administrative committee is Kenneth H. Finnessey, district manager and director of the States Steamship Company and Pacific Atlantic Steamship Company. Other members are James P. Cribben, vice president of the Associated Banning Company; Vincent P. McMurdo, Pacific Coast Manager, Luckenbach Steamship Company; Maitland S. Pennington, vice president, Pacific Transport Lines and Donald Watson, manager, Weyerhaeuser Steamship Company.

Individuals on the organization, budget and finance committee were not named. Lines represented on the committee are American President Lines, Matson Navigation Company, Pacific Far East Line, Pacific Transport Lines, Pope and Talbot, Inc., States Steamship Company and Weyerhaeuser Steamship Company.

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Figures for 1948 show the Port of New Orleans handled 97,690 carloads of export freight, not including grain and coal. This amounts to 13.3% of the total for the United States.

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BETHL
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BETHLEHEM LIBERTY SHIP SCREW INCREASES SPEED TEN PER CENT

Greater pitch of new propeller gains speed lost through ABS tailshaft ruling.

Development of a new propeller designed to enable Liberty ships to regain the sea speed loss effected last year in an effort to eliminate excessive tailshaft failures has been announced by Bethlehem Steel Company's Shipbuilding Division.

Full significance of this development can be grasped only if one bears in mind the fact that there are at present well over a thousand Liberty ships operating under American and foreign flags, and that the new-design Bethlehem propeller will enable these ships to effect a sea speed gain of 10 per cent and more on the basis of a maximum engine speed of 66 shaft revolutions per minute, as recommended by the American Bureau of Shipping.

The new propeller already has been installed on more than a score of ships, and the claims made for it are based upon actual operations at sea of a group of these vessels which furnished Bethlehem engineers with their performance reports. During the period covered in the reports, these vessels logged more than 75,000 miles over different trade routes under varying weather conditions.

1¼ Knot Gain Logged

The service results of these ships, operating on a 27-foot draft, show that the new Bethlehem propeller gives an average of 1¼ knots of additional sea speed as compared with the original wheel at an engine speed of 66 rpm.

This average sea speed gain is believed to be at least equal to the loss suffered through the lowering of engine speeds to the recommended level. For the record, it should be reported that later computations indicate that the 1¼ knot gain exceeds, on the average, the sea speed sacrificed with the old wheel at 66 rpm. Independent reports have been received that some of the Liberty ships using the Bethlehem propeller have attained higher peak sea speeds at 66 rpm than were obtained with the original propeller at the designed engine speed of 76 rpm.

Further economies, not previously anticipated, may also accrue to users of the new propeller. Although Bethlehem engineers assert that fuel consumption with the new wheel should be about the same as with the original at the same sea speed, logs of the ships reporting actually showed a reduction in fuel. Fuel consumption on any voyage, of course, is also dependent on weather and sea conditions.

Operating engineers have stated that lowering of the shaft revolutions has resulted in an easier-running engine, with less wear and tear of the moving parts and consequently reduced maintenance and repair costs.

No Price Premium

Despite its improved performance, the Bethlehem propeller is now being sold at the same price level as the current quotation for the original wheel. Like the original, the new-design propeller is 18 feet 6 inches in diameter, four-bladed, solid type, of manganese bronze and fitted with a bronze gland. It is manufactured to meet the requirements and pass the inspection of the American Bureau of Shipping, bored and keyseated to the standard U.S. Maritime Commission plug gauge, and comes finished complete, statically balanced and ready to install.

Tracing the history of the Liberty propeller, it is recalled that in the year following termination of the war a disturbing number of vessels reported breakdowns at sea. Investigation disclosed that a substantial percentage of these craft were Liberty ships which had suffered broken tailshafts and lost their propellers.

The A.B.S. thereupon undertook a study of the situation and noted that of the vessels of the class examined by regulatory authorities in the year ended March, 1948, about 22 per cent had suffered shaft casualties.

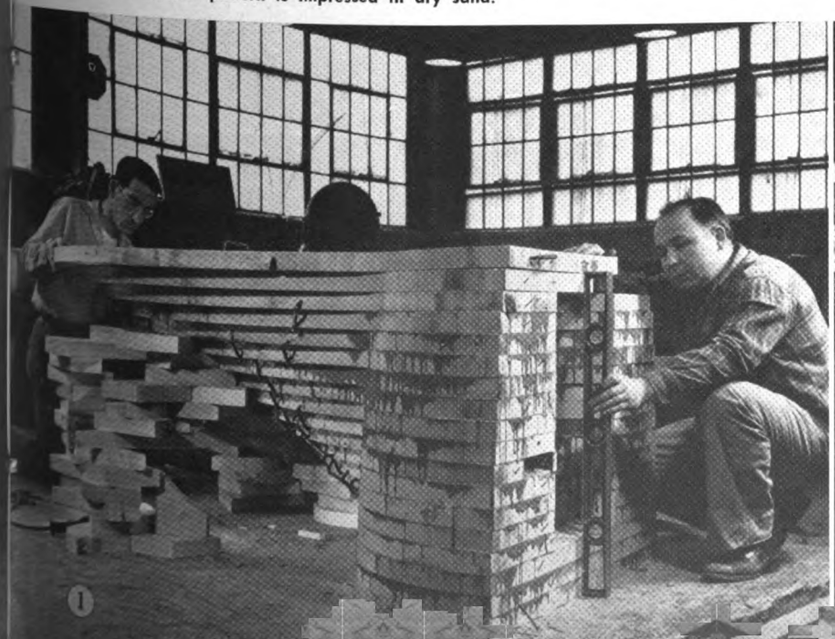
On April 9, 1948, the Bureau issued a report stating that it had determined that a torsional critical occurred at or near the designed engine speed of 76 rpm and that the resulting vibratory stresses contributed materially to the fatigue failure of the tailshaft.

At the same time, the Bureau issued a directive requiring owners and operators of all Liberty ships with engines located amidships and classified by the agency to reduce immediately the shaft revolutions to a maximum of 66 rpm until corrective measures were taken to eliminate the vibratory stresses.

The Bureau's report recommended that one of the following methods be taken

1. BUILDING THE PATTERN for the new Bethlehem wheel. The first step in the production after completion of the design work is the building of the pattern, usually a single blade with a segment of the hub. Patterns generally are built of kiln-dried white pine segments glued together and then finished to the design plan with allowance for shrinkage to suit the metal specified. This wooden pattern is impressed in dry sand.

2. POURING THE METAL. Here age-old arts and modern methods are combined to produce the bladed wheels which provide the push for our ships. After the impression of the wheel has been firmly set in the mold, and all casting surfaces treated with a mixture of graphite and molasses to bind the sand, thus assuring a firm casting, molten manganese bronze pours at 1860 degrees from the 20-ton ladle into the mold. Craftsmen group around the center of the mold to skim off the dross as it rises in the hub section. It requires from 72 to 96 hours for the casting to cool.





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to alleviate this condition: (a) furnish a new propeller designed to absorb the maximum horsepower available at 66 rpm; (b) fit a flywheel at the after-end of the engine; (c) fit counterweights on the main engine crankshaft; or (d) increase diameter of the line shafting.

Report Alarming Failure Rate

Soundness of the A.B.S. directive was highlighted only recently when the agency found that approximately 40 per cent of the more than 600 Liberty vessels it examined between February and October, 1948, had broken or cracked tailshafts. Of that number, approximately 4 per cent had failures at sea.

Bethlehem's engineers investigated the Bureau's recommendations and concluded that a new propeller would be the least expensive in cost and time involved in making the suggested change. A new wheel, it was pointed out, could be installed at the regular drydocking of the vessel without the necessity for additional lay-up time for extensive alteration of the propelling machinery. However, the question remained as to whether this would be the best solution taking into account the sea speed factor.

After careful study and consultation the Bethlehem engineers concluded that a new propeller incorporating a modified pitch could be designed to absorb the maximum horsepower available at 66 rpm and to recover most, if not all, of the sea speed lost through the reduction of the engine speed.

With that decision, the new design was developed and after approval by the A.B.S., production of the new wheel was started at Bethlehem's Propeller Division, located at its Mariners Harbor, Staten Island, New York, yard.

First Installation on ss CALMAR

The first new-design Bethlehem Liberty propeller produced by the Staten Island plant was installed on the ss CALMAR, engaged in the intercoastal trade, and a complete record was maintained of the engine and propeller performance on a round trip of more than 10,000 miles.

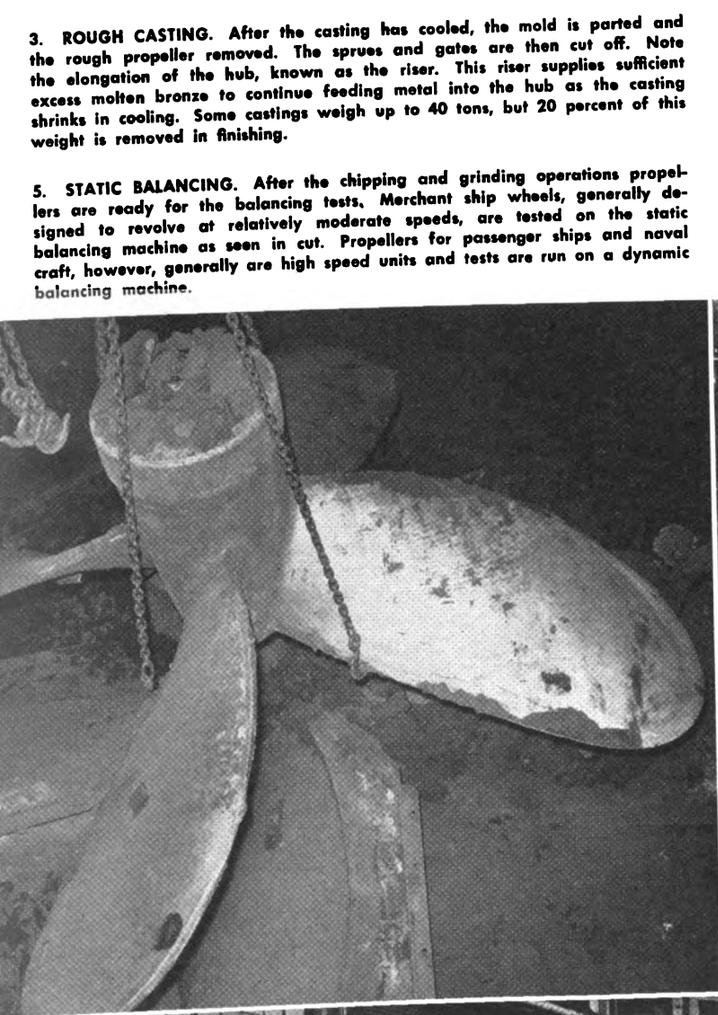
On the vessel's return to her home port, the log abstracts were carefully analyzed. The study showed that the predictions made by the Bethlehem engineers, that the new propeller would recover the

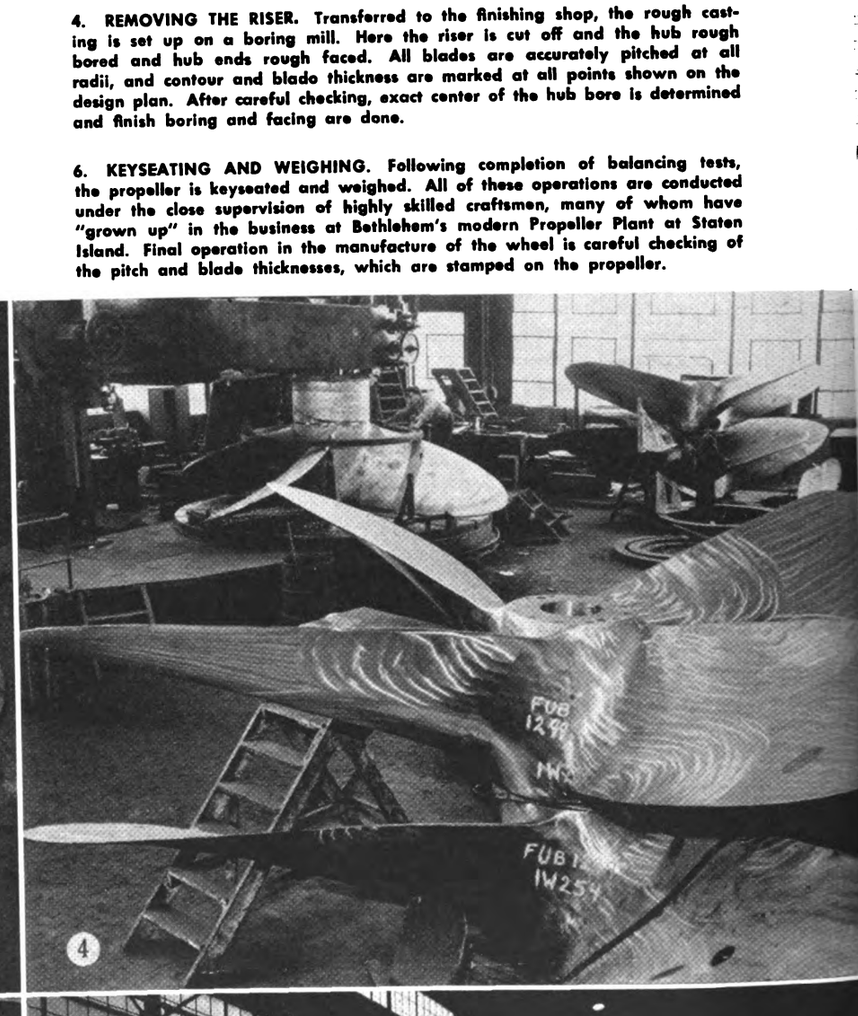
3. ROUGH CASTING. After the casting has cooled, the mold is parted and the rough propeller removed. The sprues and gates are then cut off. Note the elongation of the hub, known as the riser. This riser supplies sufficient excess molten bronze to continue feeding metal into the hub as the casting shrinks in cooling. Some castings weigh up to 40 tons, but 20 percent of this weight is removed in finishing.

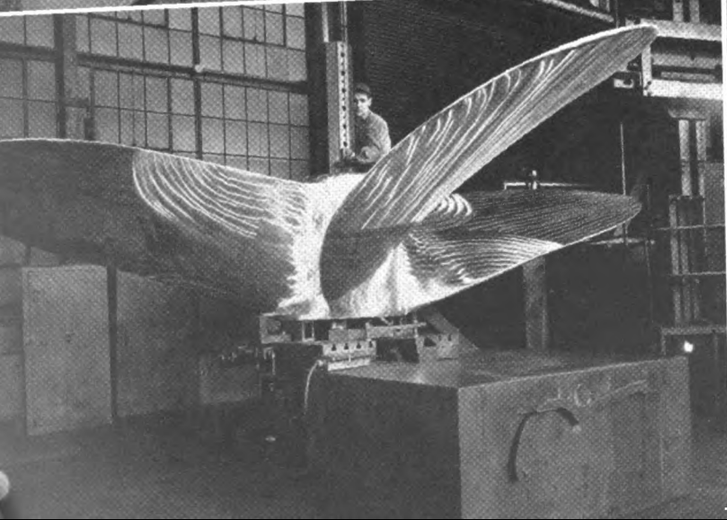
4. REMOVING THE RISER. Transferred to the finishing shop, the rough casting is set up on a boring mill. Here the riser is cut off and the hub rough bored and hub ends rough faced. All blades are accurately pitched at all radii, and contour and blade thickness are marked at all points shown on the design plan. After careful checking, exact center of the hub bore is determined and finish boring and facing are done.

5. STATIC BALANCING. After the chipping and grinding operations propellers are ready for the balancing tests. Merchant ship wheels, generally designed to revolve at relatively moderate speeds, are tested on the static balancing machine as seen in cut. Propellers for passenger ships and naval craft, however, generally are high speed units and tests are run on a dynamic balancing machine.

6. KEYSEATING AND WEIGHING. Following completion of balancing tests, the propeller is keyseated and weighed. All of these operations are conducted under the close supervision of highly skilled craftsmen, many of whom have "grown up" in the business at Bethlehem's modern Propeller Plant at Staten Island. Final operation in the manufacture of the wheel is careful checking of the pitch and blade thicknesses, which are stamped on the propeller.









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speed lost through reduction of the revolutions, were fully realized.

Installations on other Liberty ships started soon thereafter. Service results of the first group of vessels to use the new propeller exceeded even the excellent showing made by the ss CALMAR, which ran into heavy weather during part of its voyage. Subsequent reports and information made available by operators employing the new propeller furnished concrete evidence that the Bethlehem wheel fully confirmed the expectations of its designers, and in some instances went well beyond their predictions.

The new design wheel is now in full production at the company's propeller plant at Staten Island. This plant, one of the world's major producers of marine wheels, turns out propellers ranging from five to 22-feet in diameter, and from 1,500 to 60,000 pounds in finished weight. While most demand today is for manganese bronze wheels, cast-iron, semi-steel, and cast steel propellers of both the solid and built-up types with three or four blades, are produced at this plant.

Heavy Order Backlog

During the war years this plant produced more than 3,000 propellers for naval and merchant ships. It is believed to be the only integrated unit in the country, and perhaps in the world, which has complete facilities for the design, casting and finish-machining of propellers within its own shops.

Late last year capacity of the plant was expanded to handle an influx of orders for the propellers Bethlehem will supply for the Navy craft, American Export luxury liners and the 28,000-ton supertankers scheduled to be constructed at the company's Quincy, Massachusetts, and Sparrows Point, Maryland, yards. Despite this expansion, however, capacity of the plant is being taxed as new orders for the Bethlehem Liberty wheel accumulate almost daily. One of the features of this new business has been repeat orders from enthusiastic customers who already have supplied one or more of their ships with the new wheel.

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$4,000,000 Conversion on Two Ships for Farrell Lines

More than $4,000,000 is being spent by the Farrell Lines, Inc., on the complete reconversion of two luxury passenger ships to provide first class accommodations between U.S. East Coast ports and South, East and West Africa. Farrell Lines is the only U.S. flag company to serve all three areas.

The reconversion work is being done by the Gulf Shipbuilding Corporation, Mobile, Alabama. The ships made the 1,700 mile trip from New York to the Gulf under tow of two tugs of the Moran Towing and Transportation Company. According to plans prepared by Gibbs and Cox, Inc., naval architects, the liners will have 30 outside staterooms, each with a private bath and shower, and the most modern features of de luxe ship accommodations. Displacing 14,250 tons, the vessels will have a gross tonnage of 8,000 tons and will carry 6,550 tons of cargo.

The two vessels, to carry 80 passengers each, are scheduled to go into service next August with sailings every five weeks between New York, Cape Town and Durban.

The new liners will be named the ss AFRICAN ENTERPRISE and ss AFRICAN ENDEAVOR. They will join the present Farrell fleet of 14 fast modern cargo vessels, all of which have the prefix "African" in their names.

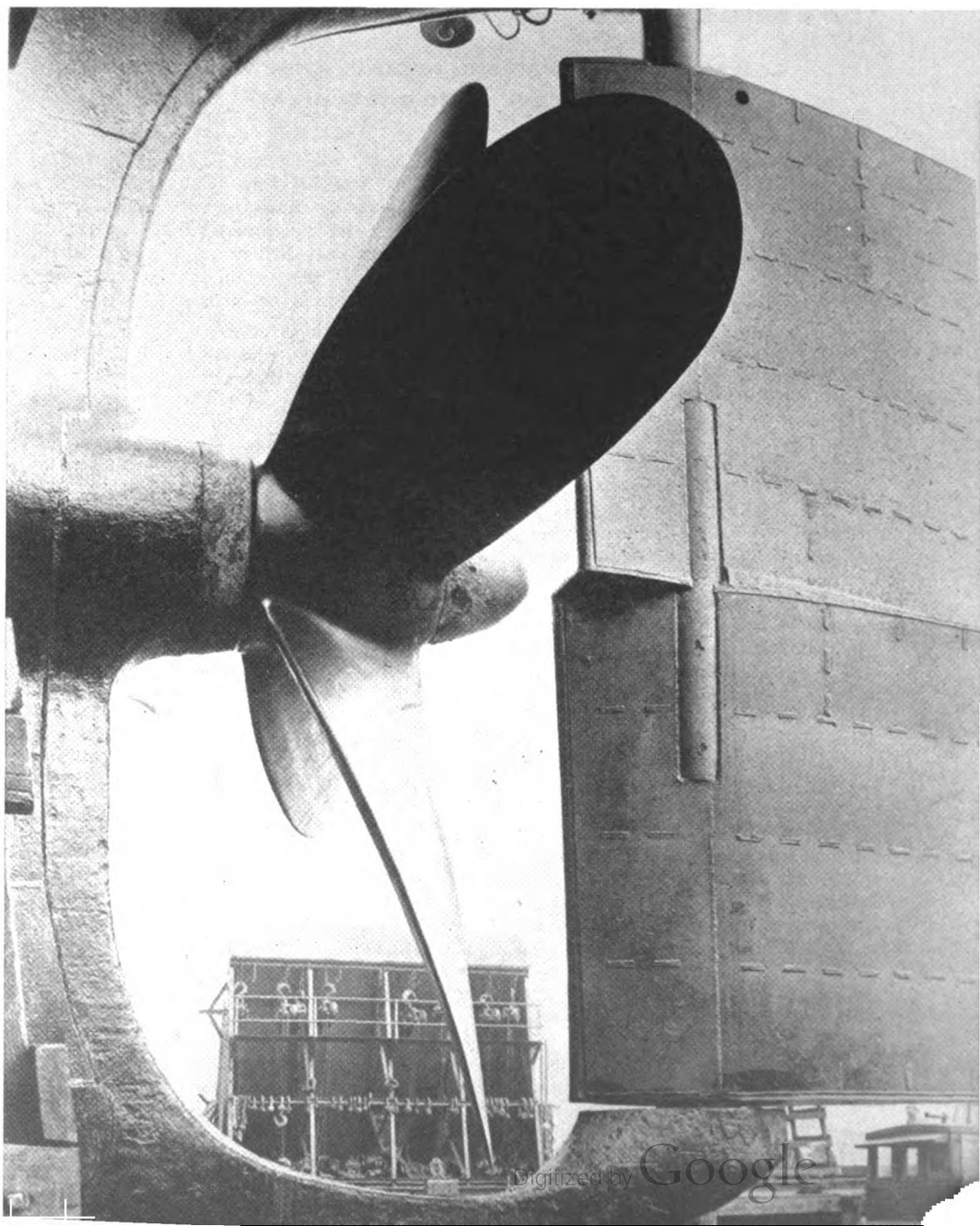
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Lloyd's Register Revises Rules for Steel Ships

In the revised Lloyd's Rules for Steel Ships a distinct departure has been made from previous methods of tabulating the scantlings. Instead of the use of the familiar "Lloyd's numerals," scantlings are now derived from one basic standard and related directly to the principal dimensions of the ship and to the draught, suitable corrections being provided to take account of variations from the tabulated figures.

The method is direct and the system of tabulation allows the effect of alteration to any of the dimensions or to the draught to be readily assessed; from this point of view alone the Rules should be of great benefit to ship designers. The effect of the new Rules is to provide a better distribution of material without increasing the weight of the structure. In brief, the thickness of strength decks has been increased and parts having little structural importance have been reduced in thickness. In this way the strength and efficiency of the hull have been improved.

NEW LIBERTY SCREW INSTALLED aboard the ss CALMAR. New propeller design was occasioned by ABS ruling cutting Liberty ship speeds to 66 rpm because of tail-shaft failures. Increased pitch restores original sea speed at reduced engine speed. Wheel is easily installed at regular dry docking of vessel, and sells at same price as original-design screw. Log abstracts for the CALMAR's first 10,000-mile voyage after installation showed an average increase of 1¼ knots over previous averages.



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This type of export packaging last year cost U.S. industry $1 billion. The steamship industry picked up the chit for $20 million of this.

HOW TO EARN A BILLION DOLLARS

Last year 7% of our total exports value went down the drain. Can we turn this into a tidy profit?

Faulty export packaging cost U. S. industry $1 billion last year. Steamship companies were tagged for approximately $20 million of this total. The cost in customer good will gone down the drain might make these figures look paltry. Losses from pilferage and damage amounted to almost 7% of our total exports value, a percentage which would represent a tidy profit had it not been in the loss column. Pilferage alone has ravaged the Port of New York to such an extent that the city can't rent some of its piers at any price.

Damage is usually a prerequisite to pilferage. If a case of goods is not broken open in handling, it is pretty hard to steal the goods. Therefore, much damage to export packages is deliberate to facilitate organized thievery. If the packages are small, it is a simple matter for the well organized bands infesting our waterfronts to make off with even a well-packaged shipment. But the steamship industry defies even New York's best racketeers to make off with a Dravo Transportainer. For this reason, these lockable steel units are rapidly becoming standard equipment in steamship operations.

Pioneer in the commercial use of these Transportainers was Agwilines, Inc. who found through experimentation that they reduced pilferage 100%, breakage of fragile goods was cut 75% and insurance rates were sliced neatly in half. Other lines began using them in a limited operation. The rush was on when shippers began asking freight agents whether or not their lines used containers. After a few shipments had been diverted to competing lines who did offer the Transportainers, Dravo found itself in the container business in a big way, with orders rolling in as fast as they could be filled. And steamship lines, forced into their use at first, soon discovered the payoff was tremendous. Nearly a thousand of these Dravo Transportainers are now in use and this is only the beginning.

A demonstration of the advantages to both shipper and steamship operator can be found in the case of Lentheric, Inc., a manufacturer of perfume and cosmetics. The products exported by this firm are fragile, valuable and highly susceptible to theft. They were shipping their product to Puerto Rico in expensive wooden cases aboard the Agwiline vessels. W. Leroy Swain, terminal operations superintendent of Agwilines worked out a new system with the export manager of Lentheric.

The Transportainers, manufactured by the Dravo Corporation of Pittsburgh, were sent out to Lentheric's Long Island City plant on trucks. The Transportainers, which have doors in one side, were loaded from a conveyor belt while still on the trucks. (See cuts). They were then taken directly to Agwilines' pier. Here fork-lift trucks picked them easily off the trucks, stowed them on the pier to await loading, and then when the ship was ready, moved them to shipside. The containers stowed neatly and safely in the hold. It was impossible to pilfer any of the goods and deliberate damage was useless, since even if the cases inside the Transportainer were broken there would be no access to the contents. Because of the rugged construction of the containers, and removal of incentive for deliberate damage, breakage was reduced to a negligible fraction.

Lentheric reported the following advantages in using the Transportainer:

1. An average saving of $120 per container because domestic packaging was used, eliminating the expense of export packing materials such as wooden cases, excelsior, waterproof paper, iron strapping, etc.
2. Approximately 36 manhours per container were saved in packing, marking, weighing and handling of export shipments.
3. 75 percent reduction in breakage.
4. A 100 percent reduction in pilferage losses.
5. A 50 percent savings in marine insurance rates.

These savings to the shipper are important customer-getters. But cost-cutting does not stop with the shipper. The steamship operator can greatly reduce turnaround time on his vessel through use of Transportainers. Lentheric's shipments run approximately 30 cases to a container. Instead of having 30 individual cases to manipulate—load on pallets, swing aboard, unload and stow—Agwilines has only to pick up the Transportainer and swing it aboard where it stows in a uniform package. Multiply this savings for one container by half a shipload, toss in the damage and loss claims, add to this customer good will at both ends of the line and the Transportainer looks like a pretty worthwhile investment.

Another enthusiastic exponent of the Transportainer is Grace Line. Captain R. E. Pendleton, terminal operations superintendent for Grace, took a look at the loss figures on their cigarette shipments to South America and called in Dravo. Fifty Transportainers, each holding 125 cases of cigarettes, were purchased and sent to the docks. When trucks arrive with the shipment, the cigarettes are immediately stowed in the containers and the double-doors locked. Pilferage is impossible. Before using these Transportainers. Grace found it extremely difficult

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to control the pilferage of cigarettes, since they are packed in cardboard boxes easily broken open. Now this headache is gone.

This is not the only advantage Grace Lines has discovered, however. Thirty containers, holding a total of 60 tons of cigarettes, are stowed in the trunk hatches of the SANTA ships. Tiered three high, this makes for maximum utilization of space. When the ships dock in South America, the Transportainers are swung over the side and left standing on the docks. Damage? None. The containers are weather-tight and can be stored in the open without damage from rain.

One of the early objections steamship men had to the container idea was the return of empty units. However, practice has removed this obstacle. Agwilines has found that it can easily load the containers with rum, mail, express goods and other articles at the other end for the return voyage. Then, too, ships rarely return loaded these days and space is available for empty containers if necessary.

For all that more than twenty steamship lines are employing over a thousand Transportainers today, the employment of this unit is still in its infancy. Its growth presents some problems, but its future is well assured by the rapidly increasing shipper demand. When distribution problems are ironed out, it is expected that a large number of Transportainer units will be in constant circulation, carrying goods directly from inland manufacturing plants to foreign importers. How the control of these units will be effected involves almost as many problems as railroads have keeping tabs on freight cars. So far, Agwilines has provided the containers to the shipper free of charge, assessing a small amount for demurrage if kept at the shipper's plant over forty eight hours.

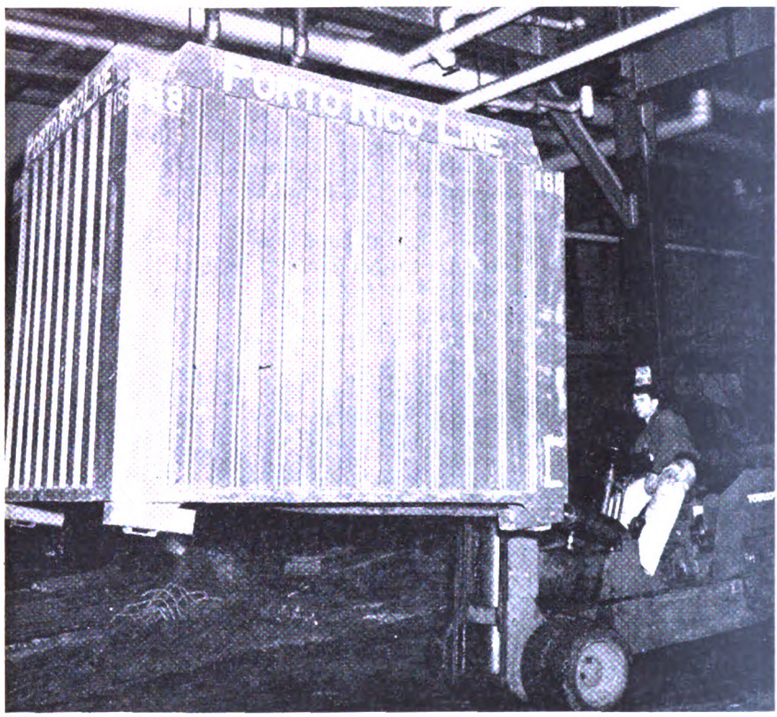
The Transportainer is constructed of welded steel and has a capacity of approximately six tons, or about one-eighth that of a standard railroad boxcar. It comes equipped with skids or with fixed or folding legs. The walls are corrugated and lend themselves readily to storing of oddly shaped goods or less-than-full loads. They are structurally designed to absorb the stresses and pressure exerted by other cargo when the vessel is in motion.

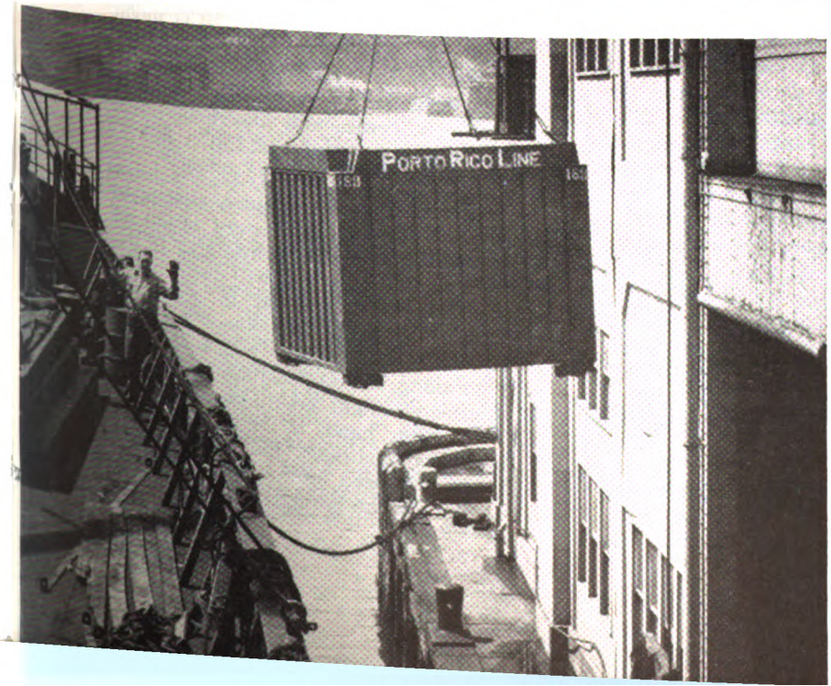
When the Transportainer is universally used, look for the disappearance of that last year's $1 billion loss figure and additional millions saved in expensive packaging, handling and transportation.

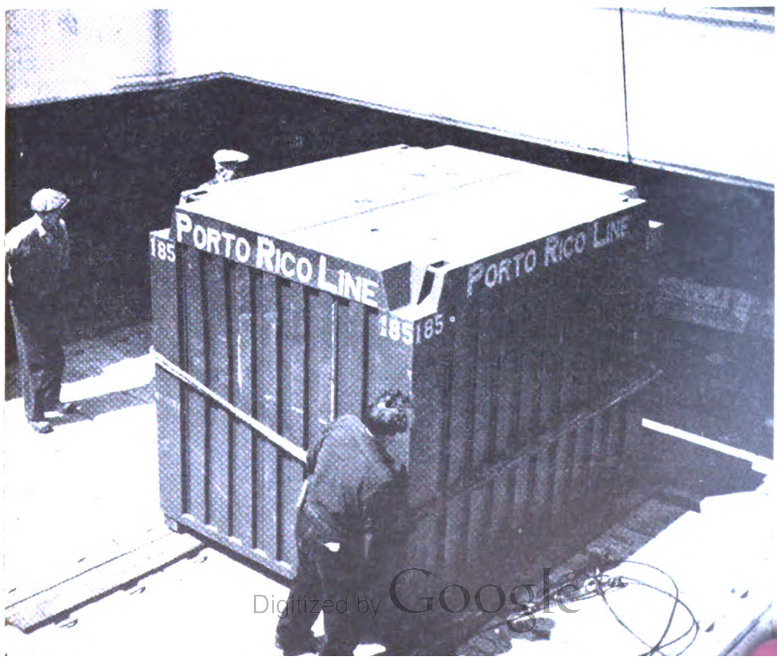
Dravo Transportainers cut pilferage losses 100%, drastically reduce breakage, spoilage, and export packaging costs, slice insurance rates neatly in half.

Full utilization of the Dravo Transportainer is shown in the cuts below. Packaged in cardboard boxes, Lentheric products are loaded into the container still on the truck at company's plant. Fork-lift truck on the pier shifts Transportainer from truck to shipside. Single lift swings aboard 30 individual cases weighing 7800 pounds. Neatly stowed in the 'tweendeck the Transportainer makes stowage problems simple. Lentheric reduced export packaging costs $120 per container, saved 36 man-hours per container at their own plant, and reduced breakage by 75%.









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WASHINGTON Reporting

By The LOG's Own Correspondents

Full Scale Senate Probe Due For Merchant Marine

Senator Warren Magnuson, (D), Washington, has emerged in the Senate as a champion for a strong American-flag Merchant Marine. He is the chairman of the subcommittee on shipping in the Senate Interstate and Foreign Commerce Committee. One of his first acts in this capacity was to introduce a resolution which would appropriate $50,000 for a full dress investigation into the multifarious problems of the Merchant Marine and to report out remedial legislation not later than March, 1950.

Senator Magnuson's proposal, contained in S. Res. 45, provides for investigation of the following:

1. Participation by the Armed Forces in commercial shipping. (See The LOG for February).
2. Revival of Japanese and German shipbuilding and operation. (See The LOG for February).
3. Participation of American bottoms in the shipment of U.S. financed cargoes.
4. Transfer of ships to Panamanian and Honduran registry. (See *Washington Reporting* in this issue of The LOG).
5. Maintenance of shipbuilding facilities.
6. Geographical allocation of Maritime Commission shipbuilding contracts. (See *Washington Reporting* in this issue).
7. Government assistance for tramp shipping.
8. The "coordination and efficiency" of the various Government agencies having jurisdiction over shipping.
9. Solution of Alaska's long range shipping problems.

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ITF Plans To Boycott Panamanian And Honduran Ships

Look for an international boycott of Panamanian and Honduran shipping by seafarers and dock workers sometime soon, although probably much later than the May 1st deadline now set. This boycott will be in protest to the "wholesale" transfer of ships to Panamanian and Honduran registry to escape rigid regulations imposed by other maritime nations.

The economic boycott was first brought up at the Seafarers' Section of the ITF at the Oslo Congress in July 1948, and widely circulated at the Geneva Conference November 24, 1948. A "Resolution on Spurious Transfers" was introduced which provided for a permanent "Boycott Committee" to organize the proposed action.

Referring to the transfer of ships to the Panamanian and Honduran flags, the resolution stated: ". . . the purpose of the practice is the evasion of taxation, currency regulations, safety, social and labor standards, and that if allowed to continue unchecked the practice will undermine all that the seafarers have fought for through organized effort over the years."

The resolution also advised officers and seamen now employed on Panamanian and Honduran vessels to seek other employment "in their own interests" before the boycott starts. The main catch in the plan is the necessity for the complete cooperation on the part of longshoremen. Since the Panamanian and Honduran vessels are unorganized, the unions cannot effectively strike the ships unless the longshoremen agree not to work them. The present position of the U.S. unions is to wait and see what their brothers in Europe do. If they actually put the boycott into practice, which seems likely at the present, the U.S. seafaring unions will call upon their shoreside affiliates to give them help—and they are pretty sure of getting it if they ask for it.

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PATA Has Nine-Point Legislative Plan

The Pacific American Tankers Association is quietly working on a nine-point plan for submission to Congress sometime this session. The nine points are as follows:

1. Extend the provisions of the 1936 Merchant Marine Act, Section 511, to permit accumulation of earnings for a period not exceeding the life of a vessel for replacement of that vessel.
2. Accept trade-in of T2's, or Liberties, at their cost price, plus the improvements, less depreciation.
3. Permit sale of Liberties or T2's or other American tankers to foreigners, funds to be used for participation in the defense program, or replacement with fast, modern tankers.
4. Construction and operating subsidies for tankers.
5. Government to amend preferred mortgage insurance requirements so as to make them workable, eliminating all unnecessary requirements. Reduce ship mortgage insurance premium rate so as to make it more attractive to financiers.
6. Eliminate 60 day cancellation clause in approvals of charters to aliens.
7. Accelerated depreciation as requested in H.J. Res. 412.
8. Eliminate the "not enhance by cause of taking" clause.
9. Reduce interest rate on unpaid balance of ship mortgages to 2½ percent.

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Industry Opposition To IMCO Cites Six Points

The industry opposition to the International Maritime Consultative Organization, as cited by the International Shipping Organizations Committee of the National Federation of American Shipping, headed by H. W. Warley, president of the Calmar and Ore Steamship companies, lists six main points of objection.

These objections are as follows:

1. IMCO has expanded its jurisdiction beyond the point which industry leaders had originally been led to believe and were willing to accept.

2. The proposed U.N. organization is the first step toward intergovernmental control of shipping which will result in the same evils as would be occasioned by an international cartel.

3. Such an intergovernmental organization substitutes international judgment for the Congressional judgment under which the industry now operates.

4. The language of the proposal creating IMCO is ambiguous. While the organization purports to be consultative, it is at the same time authorized to take over the functions of other international organizations. The industry fears that such organizations as the Safety of Life at Sea Conference will be annexed. It also contains voting procedures which are at odds with safeguards placed in the Safety of Life at Sea Conference to prevent arbitrary international action with respect to marine safety regulations.

5. The language creating IMCO does not provide for any industry participation as a matter of right, and there is no guarantee of any industry voice in the formation of U.S. national policy on IMCO matters. Previous experiences with the U.S. State Department are an indication of this.

6. What few advantages IMCO might possess are highly speculative. One of the matters in which such an international organization would be the most valuable—governmental discrimination—is completely ignored and IMCO has no power to take any effective action.

The industry will, however, attempt to determine the attitude toward IMCO on Capitol Hill and act accordingly. If the Senate committee which will decide upon ratification is determined to go ahead without taking industry views into account, then the industry will automatically go along, since opposition would gain nothing and might create some ill will. On the other hand, if the Senate committee is sympathetic, the industry will fight the proposed intergovernmental organization on the grounds above listed.

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WASHINGTON

Allen Works On Bill To Give West Coast Cut Of Shipbuilding

Congressman John J. Allen, Jr., a member of the subcommittee on West Coast shipbuilding, which is headed by Representative Richard J. Welch, is drafting legislation which will amend the 1936 Merchant Marine Act to provide for a definite allocation of shipbuilding to West Coast yards.

The subcommittee is planning to visit President Truman sometime this month to urge him to take whatever measures he can to keep the coast yards active. However, Allen does not feel this will accomplish much, since a similar appeal last year came to nothing. Instead, he believes permanent legislation should be enacted which will set down specific regulations for geographical allocation of shipbuilding.

The proposed legislation is being discussed through correspondence with Admiral W. W. Smith, chairman of the Maritime Commission, and Admiral Mills, until last month head of the Navy Bureau of Ships. Final form has not yet been settled, but tentatively the allocation will be based on a percentage distribution of shipyard employees. The Maritime Commission is generally not in favor of any rigid regulations on geographical distribution. The 1936 Act permits the Commission to allow the West Coast a 6 percent differential, but according to the Commission's figures the differential is now running approximately 13% above East and Gulf Coast yards. Mr. Allen's plans will require that all ships to operate from the West Coast will be built on the Pacific, to the extent that facilities permit.

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Senate Committee Attacks MC Accounting Practice

Blasting the Maritime Commission for the "lack of a progressive point of view" and describing others in the maritime field by saying: "Even the industry with which it deals is hide-bound by tradition and gives evidence of decadence. Its accounts are kept in the same way as they were in the days of the Venetian traders," the Senate committee on expenditures in the executive departments loosed a general attack on the government shipping agency.

The committee, under the chairmanship of Senator Aiken, in the 80th Congress, recommended that the Maritime Commission "should have seven to nine part-time members, representing industry, labor, government and the public, who would meet regularly for the performance of their duties." It also recommended that the executive functions of the Commission should be made the responsibility of one executive who would have complete charge within the confines of legislation. It further recommended that this single-headed agency should automatically be placed under the Military Establishment during time of war, and separated from the Armed Forces in time of peace to prevent domination of the shipping industry by the military.

Senator Ferguson, chairman of the investigations subcommittee, fired a broadside at the Commission accounting practices, and backed the attack with facts and figures.

The subcommittee report stated: "Investigation disclosed that in September 1947, the surplus vessel, steamship LEONARD WOOD, was offered for sale as scrap by the Commission on a "where is, as is" basis. In December 1947, the Commission approved the sale of this vessel for scrap to Consolidated Builders, Inc., a Kaiser subsidiary, of Portland, Oregon. Consolidated Builders, Inc. had submitted a high bid of $65,750. After the purchaser started scrapping operations on this vessel, 662.92 net tons of pig lead was found in the double bottom fuel oil tanks. The lead was salvaged by the purchaser and sold for $206,831.04. The Commission subsequently estimated the value of the lead at $232,926.40."

Another case was listed in the instance of the JOSEPH T. DICKMAN which was sold to Kaiser for $67,100 and contained 112 tons of pig lead which Kaiser sold for

ARMY HAULING 20% OF U. S. ECA SHIPMENTS

An article appearing in the February issue of The LOG, entitled "The Army is Gobbling our Merchant Marine" touched off a series of inquiries in Washington. The article, widely circulated on Capitol Hill a few days in advance of publication, was the subject of a radio talk by Senator Warren Magnuson, in which he strongly supported The LOG's view that the Army should get out of shipping.

During the hearings on U.S. share of ECA shipments, at which ERP Administrator Paul Hoffman, and his shipping adviser, Colonel Arthur Syran appeared, the members of the House Merchant Marine and Fisheries Committee queried Colonel Syran on the Army's participation in the movement of ECA financed shipments. Under a barrage of penetrating questions, Col. Syran finally admitted that 20% of the U.S. share of 50% of all ECA shipments were moving in Army vessels. This means that only 30% of the ECA cargoes are left for U.S. commercial ships, rather than the 50% intended by Congress and claimed by ECA officials.

Colonel Syran, a long-time government shipping man and generally sympathetic to the industry, found himself pretty much on a spot during the hearings. Hoffman opened his remarks by stating he knew nothing about shipping and thereafter referred practically all questions to Syran. This put Syran in the position of backing up his boss in a situation which most shipping men are convinced he had little heart for. Hoffman's arguments on the 50-50 split were pretty thin and hard to substantiate. Representative Weichel put his finger on the situation when he asked Hoffman if he was not using the advice of his counsel to accomplish something he wanted to do, rather than fearing the wrath of Congress as he had stated. It was pretty apparent that Hoffman was using a legal loophole to get out from under the pressure the British and other shipping nations have brought to bear on him in favor of abandoning the 50-50 split.

Hoffman admitted under questioning of Congressman Hart that his letter stating he was abandoning the 50-50 clause had a strong effect on tramp rates of foreign shipping companies, which advanced $2.50 per ton immediately after his announcement. He also admitted under cross examination from Congressman Bonner that during the month of January more than 30 shiploads of grain had stood on the docks for lack of ships, and yet many U.S. liners had sailed half-loaded. Hoffman also confirmed the fact that of 408 shipments allocated to foreign vessels in January, 70 were given to Panamanian and Honduran-flag vessels.

Admiral W. W. Smith introduced for the Maritime Commission a substitute bill for H.R. 1340 which was considerably watered down from the original version introduced by Chairman Bland of the House Merchant Marine Committee. This watered down version was the result of a White House conference which brought Administration pressure cracking down on the heads of the Commissioners. Closeted with Hoffman and his aids, the result of the conference was a bill which allows the Commission to make exceptions to everything in the bill after it becomes law. Reportedly Judge Bland was the only one who did not yield to Administration pressure, in the form of John Steelman. It is understood that Steelman threatened Judge Bland with a Presidential veto if he did not withdraw his bill, and the committee chairman advised Mr. Steelman that the bill would pass over a Presidential veto.

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$41,736. In this instance the Maritime Commission pleaded a secretarial error in copying figures which listed the pig lead aboard the DICKMAN as five tons instead of 100 listed by the Navy when the ship was turned over to the Commission for disposal. The subcommittee charged that this "single stenographic error cost the Government over $41,000, the value of the additional ballast found on board."

In addition to these two flagrant cases, the group charged that in 59 other instances vessels containing lead were sold without any consideration of the value of the ballast.

Delving into the collection of charter hire from steamship companies, the Senators, pointing out that in March 1948 various charterers were in arrears over $10,000,000, including the Sword Line which was in arrears $1,396,833.16, stated: "The excuse given the Commission for the failure to discover defaults is the time-worn excuse of insufficient appropriations, lack of qualified personnel, and the volume of the work load. It was developed that whereas the Commission's bookkeeping is practically current today, there is a backlog of $16,000,000 of unsecured claims that the Bureau of Accounts has not even billed, and additional accounts which have not even been analyzed, on which there is probably due the Commission somewhere between $25,000,000 and $50,000,000."

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New Labor Law Proposed To Replace T-H Act

The Administration's proposal for carrying out the campaign promise for outright repeal of the Taft-Hartley Act are contained in S. 249, introduced by Senator Thomas of Utah. This bill, entitled "National Labor Relations Act of 1949," would be substituted for the T-H Act now in force. It makes the following provisions:

1. Repeal the Taft-Hartley Act.

2. Reinstate the National Labor Relations Act of 1935 as it existed prior to enactment of the Taft-Hartley Act.

3. Amend the National Labor Relations Act of 1935, as amended, by:

(a) Retaining the 5 members of the NLRB.

(b) Amending Section 1 to cite unjustifiable conflicts between labor groups and the failure of employers to maintain a neutral position in such conflicts as cause of strife.

(c) Defining the term "secondary boycott" to mean a "concerted refusal in the course of employment by employees of one employer to produce, manufacture, transport, distribute, or otherwise work on articles, goods, or commodities because they have been or are to be manufactured, produced, or distributed by another employer."

(d) Defining the term "jurisdictional dispute" to mean "a dispute between two or more labor organizations (not established, maintained, or assisted by any employer action defined in this Act as an unfair labor practice) concerning the assignment or prospective assignment of a particular work task by an employer."

(e) Section 8—(defining unfair labor practices of a particular work task in accordance with an award under section 9(d) of this Act."

(f) Defining as unfair labor practices of labor organizations:

(1) the causing or attempting to cause employees to engage in a secondary boycott, or concerted work stoppage to compel an employer to bargain with a particular labor organization as the representative of employees if another organization is the certified representative of such employees within the meaning of Section 9, or the employer is required by the Board to recognize another organization, or the employer is currently recognizing another labor organization and has executed a collective bargaining agreement concerning which a question may not appropriately be raised under Section 9.

(2) the causing or attempting to cause employees to engage in a secondary boycott, or a secondary work stoppage, in furtherance of a jurisdictional dispute if such labor organization is seeking to compel an employer to assign a particular work task contrary to an award under Section 9.

(g) Section 9 is amended by the addition of a new subsection:

"(d) Whenever a jurisdictional dispute results in or threatens to result in a concerted work stoppage, or a secondary boycott, affecting commerce, the Board may hear and determine, or appoint an arbitrator to hear and determine, the dispute, and issue an award, first affording the labor organizations involved in the dispute a reasonable opportunity to settle their controversy between or among themselves. In determining the dispute, the Board or the arbitrator, as the case may be, may consider any prior Board certification under which any such labor organization claims the right to represent employees who are or may be hired or assigned to perform the work tasks in dispute, any union charters or interunion agreements purporting to define areas of jurisdiction between or among the contending labor organizations, the decisions of any agency established by unions to consider such disputes, the past work history of the organizations involved in the dispute, and the policies of this Act. If an arbitrator is appointed to hear and determine a dispute, he shall proceed in accordance with such rules and regulations as the Board may prescribe; and his award determining the dispute shall have the same effect as an award of the Board. In any proceeding under this section, the employer whose assignment or prospective assignment of a particular work task is in controversy shall have an opportunity to be heard in any hearing conducted by the Board, or an arbitrator, as the case may be. If at any stage of the proceeding it shall appear to the Board that the dispute is in fact one concerning representation, it shall treat the case as one instituted under section 9(c) of this Act and proceed accordingly."

(h) Section 8(a) (3) providing for closed shop regardless of ban by State laws.

(i) Section 8—making it an unfair labor practice for an employer or labor organization to terminate contract without 30 days notice to U. S. Conciliation Service.

4. Section 201 would return the U. S. Conciliation Service to the Labor Department.

5. Section 301 would provide that when a national emergency exists the President shall issue a proclamation to that effect and call upon the parties to the dispute to refrain from a stoppage of work, or if such stoppage has occurred, to resume work and operations. The President would appoint an emergency board to investigate the dispute and make a report within 25 days to the President. After the proclamation and until 5 days after receipt of the report the parties to the dispute shall continue or resume work.

6. Section 401 would continue the Norris-LaGuardia Act and the Clayton Act in full force and effect.

7. Section 402 would amend Title 18 of the U. S. Code to make unlawful political contributions by a national bank or a corporation organized by authority of Congress.

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Foreign Tankship Contracts For Five New Tankers

Foreign Tankship Corporation has negotiated a loan of $25,000,000 from the Equitable Life Assurance Society of the United States, it was reported by the company.

The borrowing will supply a portion of the money required to build five new 28,000-ton tankers, which have been contracted for with the Bethlehem-Sparrows Point Shipyard, Inc. It is guaranteed by Foreign Tankship's parent company, Standard Oil Company of California. When completed and delivered, the five tankers will cost approximately $30,000,000.

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SHIP REPAIRING

"IT'S A TOUGH BUSINESS"

Here are some tips on how ship operators and repair yards can cut costs through cooperation.

by LANGDON D. PICKERING
Consulting Naval Architect, Marine Engineer, & Marine Surveyor.*

All business has problems, such as labor, work load, sales volume, production, competition, etc., and the business of ship repairing has them all and more too; and it is a tough business. I do not mean tough from the standpoint of treatment of the customer. No, that is not true, for butter will melt in the mouth of the average ship repairer, for the customer is always right. Explaining the tough business, I mean that ship repairing is a highly competitive business; it is a twenty-four hour a day business, three hundred and sixty-five days a year. In the marine field, the ship repairers are like the country doctor—the specialist, surgeon, diagnostician and anesthetist *all in one*. They must analyze the trouble and correct it by renewing or repairing in the shortest possible time, without pain to the customer as to costs.

I am going into a little detail relative to ship repairing for some of my fellow members of the Society who are probably not too familiar with this phase of the marine industry and think it is just a minor part of shipbuilding. Well, it is a business all by itself, and in many ways more difficult than shipbuilding. In some cases ship repairing is an integral part of a shipbuilding plant; and when shipbuilding is at a low point, the ship repairing is greatly appreciated to take up the slack and help carry the load. Shipbuilding can be properly planned and scheduled, with time to make studies as to budgets, progress charts, and many other efficient means of controlling the job, while the ordinary ship repair job would be finished before you could draw up a schedule. Extensive ship repair jobs, such as large fire damages, reconditioning, collision or grounding of 30 days or more can be scheduled, so as to control man power and expedite and sequence material, all to shape up and control the job to prevent too great a loss to the ship repairer.

Ship Repair Problems

I am now going to list some of the ship repair problems:

(1) A ship repair plant must have employees in their balanced organization to do any kind of craftsmanship in the shortest period of time.

(2) A ship repair plant must keep work flowing into their plant via the sales force, bidding on contracts in order to keep all crafts busy. Now, if you give this some thought, this is a tough job, and you might ask why. Well, if you have to lay off good craftsmen they sometimes start work in other industries. You cannot get them back when you need them; then you have to hire and train new men, which increases the costs and slows down production.

(3) The ship repairer has an investment in equipment such as, piers, drydocks, cranes, special machine tools, welding equipment, cleaning equipment, sand blasting equipment, floating equipment, all kinds of staging, etc., all of which is not used on every job, but must be available.

(4) The ship repairer must maintain a protection force, for safety, fire, drydock watch, etc., as well as a general police force for plant and ships. This force must always be on the alert and it is good insurance both for the customer and the ship repairer.

(5) The ship repairer has a limited time to do an unlimited job. I mean here that the ship repairer is always expected to do the almost impossible; or in milder words, to do a ten-day job in six or seven days or better. The steamship owner or operator *must* have his ship, and therefore the ship repairer does the heroic.

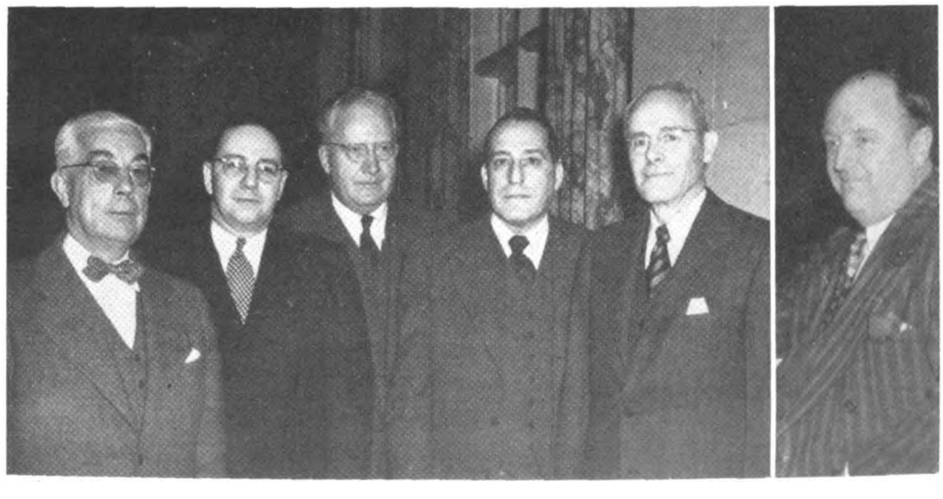
(6) Material—special and replacement—is one of the necks of the bottle. The manufacturers are the big boogy boo to the ship repairer and cause many white hairs to sprout. A ship repairer must always have his material yesterday for today. The ship repairer therefore must carry a well-balanced stock or know where he can pull it off a supplier's shelf, as a ship cannot be delayed for want of material. The ship repairer often has to fabricate, or cast and machine, material as a substitute; but the ship cannot be delayed.

(7) A ship repair plant has to be prepared to work three shifts or over-time

*Presented before the New York Metropolitan Section, Society of Naval Architects & Marine Engineers, January 28, 1949.

"THE PROBLEMS OF SHIP REPAIRING" were discussed at a joint meeting of the New York Metropolitan Section, The Society of Naval Architects and Marine Engineers and The Society of Marine Port Engineers New York, N.Y., Inc., held at the Columbia University Club, January 28th.
Left to right, LANGDON D. PICKERING, author of the paper, Consulting Naval Architect, Marine Engineer and Marine Surveyor; F. W. GAINES, Superintendent Engineer, Tankers Co., Inc., President, The Society of Marine Port Engineers New York, N.Y., Inc., WILLIAM B. JUPP, Manager, Construction and Repair Div., Socony-Vacuum Oil Co., Chairman, New York Metropolitan Section; ARTHUR R. GATEWOOD, Chief Engineer Surveyor, American Bureau of Shipping, Vice Chairman, Metropolitan Section; and JOHN B. WOODWARD, JR., President, Newport News Shipbuilding & Dry Dock Co., National President, The Society of Naval Architects and Marine Engineers.

T. A. McQUILLING, extreme right, Operating Manager, Marine Div., Pan-American Petroleum & Transport Co., Chairman, Technical Committee, The Society of Marine Port Engineers New York, N.Y., Inc., who presided over the Port Engineers' part of the discussion of Mr. Pickering's paper.
Port engineers participating with Mr. McQuilling in the discussion included: H. S. CABLE, Asst. Superintendent Engineer, Isthmian Steamship Co.; C. N. GUCKERT, Port Engineer, Robin Line; F. E. HANSEN, Superintending Engineer, Socony-Vacuum Oil Co.; E. W. CALMER, Port Engineer, Grace Line; and, F. W. GAINES, Superintendent Engineer, Tankers Co., Inc.



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"The ship repairer has a limited time to do an unlimited job." Here a worker clamps a completely new bow section in place at Todd's.



"A ship repair plant must have employees to do any kind of craftsmanship." Todd worker above is one of these "craftsmen."

around the clock. This means proper supervision.

(8) Weather conditions and delays due to heavy winds, fog, ice affecting the movement of ships; also rain, snow and cold all hold up jobs and make it difficult for the ship repairer, as the ship cannot be delayed.

(9) Delays are a problem. The discharging of cargoes prior to a ship coming to the plant is often delayed by weather or other causes which in turn affects the ship repairer's dry dock schedule. This sometimes delays the ship following etc.; yet the owner or operator must have his ship to meet his sailing schedule.

I want to say right here that where I have repeatedly said in the foregoing "ship cannot be delayed" or "owners or operators must have their ship," that this is one of the most important phases of ship repairing. The ship repairer must do everything under heaven and above earth to help the owner and operator get his ship on time to meet a sailing date.

(10) Classification Societies, U. S. Coast Guard and U. S. Public Health requirements have to be carried out by the ship repairer. Therefore, he must keep in close touch with these authorities to advise them when the work is ready for inspection, so as to not delay the ship.

(11) A ship repair plant must have a good technical force and good estimators. The latter is a vital part of the organization. Upon the estimators rests a great deal of the responsibility for the procurement of the work and customer relations. A smart estimating force can make a smart plant and they can assist the production department by giving them a clear picture of the work. Of course we all know how important to a plant is a good production department—one that knows what is going on and does the job right the first time.

(12) There are some large and small ship repair plants in certain geographical locations that are not self-sufficient either due to size or equipment, etc., or due to the availability of sub-contractors, who specialize in particular craftsmanship or general cleaning or painting, etc. In these particular cases, the ship repairer must have complete cooperation from these sub-contractors, all to the purpose of coordinating and expediting the repairs to the vessel.

Contracting Methods

I am now going to list below some of the methods by which work is obtained and handled in ship repairing:

(a) COMPETITIVE BIDS—which require good and intelligent estimators to handle all phases of hull and engineering, and alert management to decide what to do, to get the job.

(b) AGREED PRICE for work between owners and ship repairers before the work is started. Again good estimators and alert management is needed to get the price within a reasonable time, with the cooperation of the production department, so that the owner or operator can put the work in hand, and be satisfied with the price.

(c) AGREED PRICE for work upon completion, between the owner and ship repairer. I honestly believe this is one of the fairest, cheapest and most satisfactory method of handling the job. Again, a good estimator, who knows the production methods and secures all the information about the job, can give a fair and reasonable price which he can substantiate and that will be satisfactory to the owner or his representative. Again, management must take an interest.

(d) TIME AND MATERIAL—where the owner desires certain work done under his direction on an hourly basis. Some of us shy at this kind of work, but if it is properly supervised and daily work sheets received from ship repairer, it is the cheapest method of performing certain kinds of work. The owner pays for billing labor on a price-per-hour basis, for material on a cost-plus-a-profit, and for certain machine tools as agreed on an hourly basis.

(e) UPSET PRICE JOB—where the ship repairer agrees with the owner or operator in advance, for the work specified, that the price given is the top limit. Again, good and intelligent estimators along with alert management are necessary in order to assist the owner or operator to get the job started.

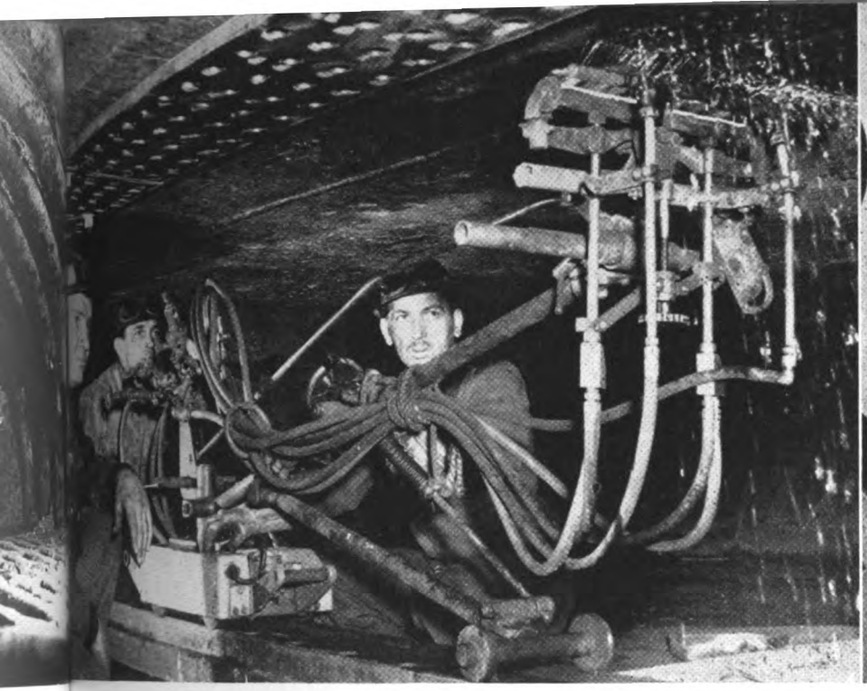
(f) GOVERNMENT CONTRACTS—where work is put in hand and all subject to daily checking and final auditing. This is always more costly no matter how alert or efficient both the ship repairer or government representatives may be. It makes it difficult for the ship repairer to control the job and keep costs within reason.

(g) AGREED PRICE—for work based on surveys by underwriters' representatives where overtime is not to be considered and yet the job is to be expeditiously handled. Again, an alert and good estimator along with intelligent management is necessary.

(h) AGREED OVERHEAD AND PROFIT—where it is agreed between an owner and a ship repairer, *where the latter* is to handle *all* of the owner's work, on a cost labor, agreed overhead percentage on cost labor, an agreed profit, and cost material with an agreed percentage of profit on the material. This method makes it necessary for periodical audits.

I have given you some of the problems of the ship repairer and I have also shown you the basis on which work is procured. Also, I have tried to bring to your attention the importance of good estimators who are part of the ship repairers' technical staff. All estimators should have some technical background and also have a good knowledge of the practical end of ship repairing by experience at sea and in the production department of a shipyard. A ship repair plant should have a naval architect, a chief engineer and draftsmen, if the size of the organization can use them efficiently; but a technical force is necessary for designs, drawing and sketches either for the owners or to assist

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"The ship repairer has an investment in equipment which must be available." Workmen above "stress relieve" a tanker with special Todd equipment.



"A ship repairer must have his material yesterday for today." Here a General Electric engineer works on a turbine at repair yard.

the production and purchasing departments to expedite and carry out the repairs.

Room For Improvement

Now, I have some suggestions where I believe there could be closer cooperation between the owner or operator and the ship repairer—remember, if there is no owner or operator, there is no ship repairer.

(1) If the owner can give the ship repairer as much advance information as possible before the ship arrives in port or at the ship repairer's plant, it will expedite the repairs. The information should cover the major job, or what may be expected, a copy of the work list or rough copy of the repairs, or any other information. Also, this information should advise when the ship is expected to arrive at the plant; whether some work can be started at the discharging berth; when the ship will have to be on the loading berth. This advance information should advise of any special materials to be purchased or parts of machinery or castings to be obtained. It should include any material that the owners are furnishing; whether it has been shipped and how it is routed. If damage is expected on dry docking, the ship repairer should know of it. He should know if the ship can be put right on dry dock; if the ship repairer will have a chance to finish up some of the work at the loading berth; or if the ship will sail for sea direct from the plant. Many more questions which, if given some thought in advance, will help both the owner and the ship repairer.

All of the above helps the ship repairer to analyze the job; to get the various crafts lined up and check the material required. Close cooperation between the owner or operator and the ship repairer as to advance information should help the owner or operator to get a better and quicker job. Also, the job having been given some thought in advance, it should reduce the costs. Of course the foregoing is based on work being sent to a ship repairer without bids, or in other words, by a customer. Where bids are asked, a portion of the above data may be in the specifications or given verbally upon request. The time for completion of the job is often given and sometimes the ship repairer states the time required as part of his bid. On bid jobs it is dog-eat-dog; and the best interpretation of the specifications, based on what you do not have to do and the additional work which develops, all are part of the costs and keep the owner or operator on the alert. Competitive bidding is cold blooded and I have often found better cooperation and more satisfactory prices by agreeing to a price after the job is completed.

(2) The owners or operators should have a representative on the job at all times. One who can say yes or no, or who can get in touch with higher authority is a great asset to expediting the work; and it also helps to keep the costs within reason. In cases where the owners or operators do not have the personnel to constantly supervise a large job, they will find it advisable and to their advantage, as to costs and expediting work, to employ a qualified representative or organization which will handle the work for them. The ship repairer welcomes on the job at all times a representative who can make a decision, as it helps prevent delay of the job. I might say right here that all ship repairers, as well as most industry, are still soft from the war and postwar period. Supervision is nowhere up to the prewar standard and therefore it is more necessary for the owner or operator to carefully supervise the work for which he is paying the bill. In my estimation, supervision for ship repairers is one of management's big problem today. The only way management can improve it is to get out of the swivel-chair and out into the plant and see what is going on during the day and night. Management is depending too much on conferences and collecting data from individuals who just have not had the experience or are not qualified to check the supervision. I do not condemn all conferences, but when you take all your foremen and leading men off jobs during working hours, you cannot but delay the work and increase the costs. The customer is paying for supervision and he should get supervision.

(3) The cooperation of the owner or operator relative to ships' personnel as to paying-off, etc. for large jobs and retaining those who would be of assistance in carrying out the repairs is necessary.

(4) The cooperation of the owner or operator in cold and freezing weather to maintain steam on the ship helps to get better and more work done in the machinery spaces. In my estimation, donkey boilers on the pier or on deck are a waste of money. The time has come when a ship repairer should have berths where sufficient steam and electric power can be furnished for dead ships.

(5) Again I am going to repeat that the owner or operator can help by giving advance information and by having a representative constantly on the job. The ship repairer can help by having more interest taken by management (top-side) and supervision. The ship repairer should keep the owner, operator or agent advised as to any anticipated delays due to developments in the work which might change the date of completion. Close cooperation between all interested parties is the answer to a good-smart-quick-job at a reasonable cost.

Mooring And Drydocking

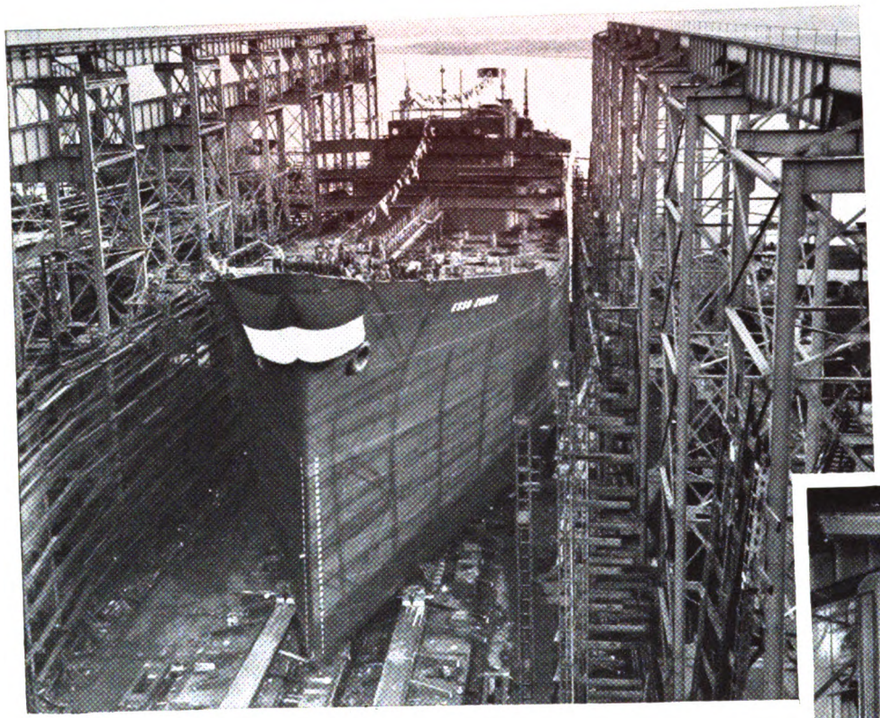
There are many points which I may have overlooked in this brief discussion, and many details that I could have included, but with this subject it is difficult to know where to stop.

There are a few general points in connection with the dry docking of a vessel that are always important; such as draft, trim, delivery of a vessel without list (except in an emergency), condition of

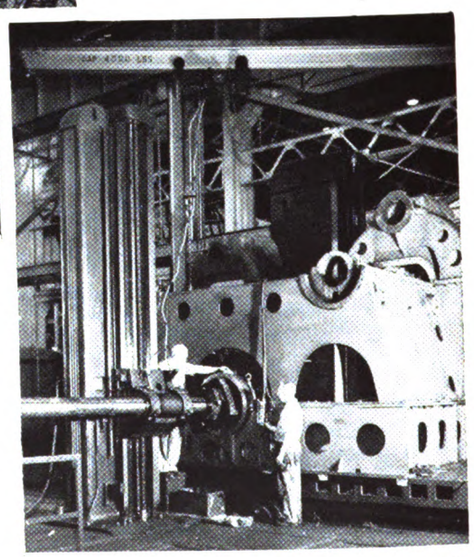
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SUN SHIP LAUNCHES NEW 26,555-TONNER



A new era in marine transportation begins with the launching of the SS *Esso Zurich*, built to the design of and for the Standard Oil Company (New Jersey), by the Sun Shipbuilding & Dry Dock Company at Chester, Pa. First of the new super-tankers now coming off the ways, she is faster (speed 16 knots), larger (dead weight 26,555 tons), longer (length 628 feet), and holds 65 per cent more oil (capacity 230,000 barrels) than the well known U.S.M.C. T2-SE-A1 tankers. Like many others of her class now under construction, she is propelled by a General Electric geared-turbine drive of new design. Generators, motors, control and switchboards were also supplied by General Electric.



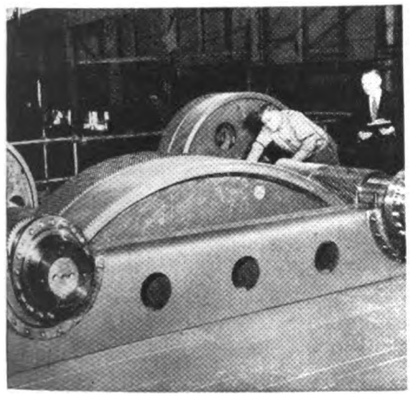
Accurate machining assures close tolerances, as in this boring operation on the main bearing of the reduction-gear assembly. The General Electric turbine which drives the reduction gears consists of one high-pressure unit and one low-pressure unit, provides high thermal efficiency. The high-pressure unit handles incoming steam at 835 pounds gage pressure and 840 degrees F., highest ever used in merchant ships.

PROPULSION DRIVES
DIESEL-ELECTRIC
TURBINE-ELECTRIC
GEARED-TURBINE
MARINE AUXILIARIES
and
KEEP 'EM SAILING SERVICE

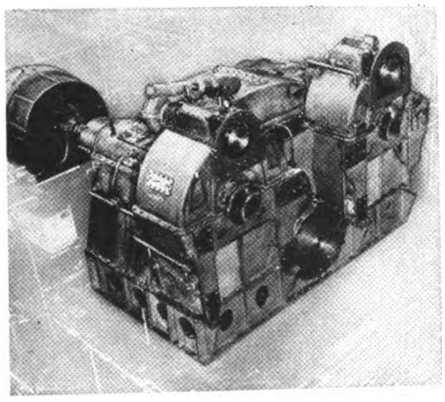
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FIRST SUPER-TANKER; HAULS 65% MORE OIL

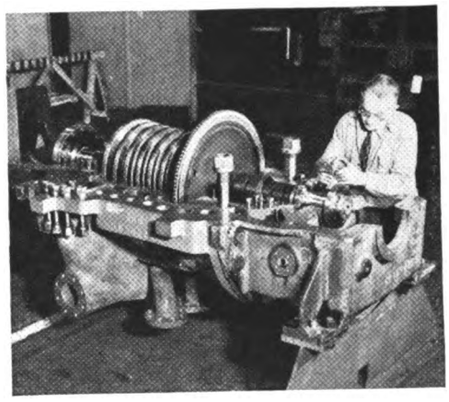
General Electric equipped SS *Esso Zurich* leads parade of giants having 230,000 barrel capacity in new building program. G-E geared-turbine propulsion drive of new high-pressure design supplies 12,500-hp, boosts power-plant efficiency, gives 16-knot speed.



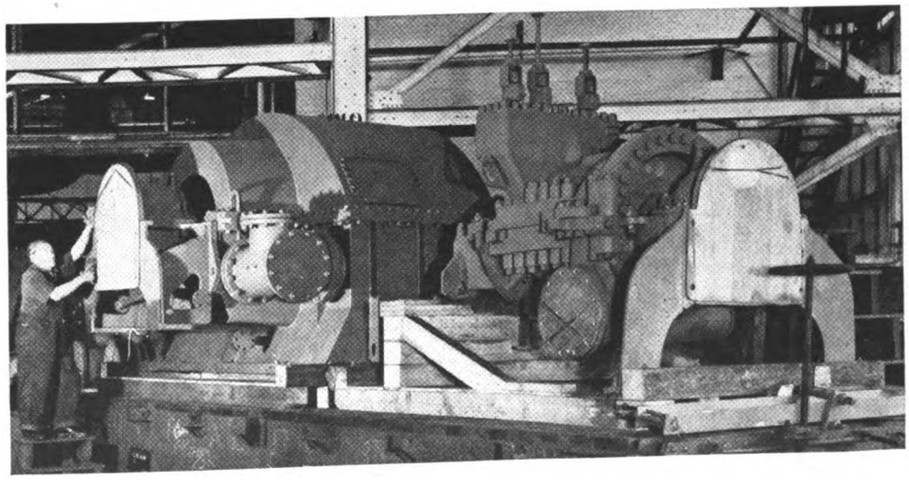
The low-speed gear, the low-speed pinions, and the high-speed gears are carefully examined before test operations begin. With the precision of fine clockwork, all large propulsion gears are cut on hobbing machines with accuracy greater than 1/1000 inch — even though in this equipment the bull gear alone is 13½ feet in diameter!



To provide ample assurance of dependable performance at sea, the gear assembly is checked on a test base at the General Electric Lynn River Works. A geared-turbine drive has minimum weight per horsepower produced, and provides high over-all economy because fuel consumption and maintenance cost is low.



Over-all efficiency of the power plant has been increased through: 1) optimum boiler feed-water temperatures, 2) reduced throttling losses, 3) improved turbine design and efficiency, and 4) reduced heat loss in the condenser overboard discharge. Here, a workman installs a bearing in the high-pressure unit of the G-E turbine.



Here are the completed high-pressure and low-pressure units just before being shipped for installation on the SS *Esso Zurich*. Propulsion equipment for more than a third of the large oil tankers now under construction or contract in the United States are being supplied by General Electric, as well as sixteen 400-kw turbine generators for ship's service. See your G-E representative for detailed information on marine propulsion and auxiliaries. *Apparatus Department, General Electric Company, Schenectady 5, New York.*

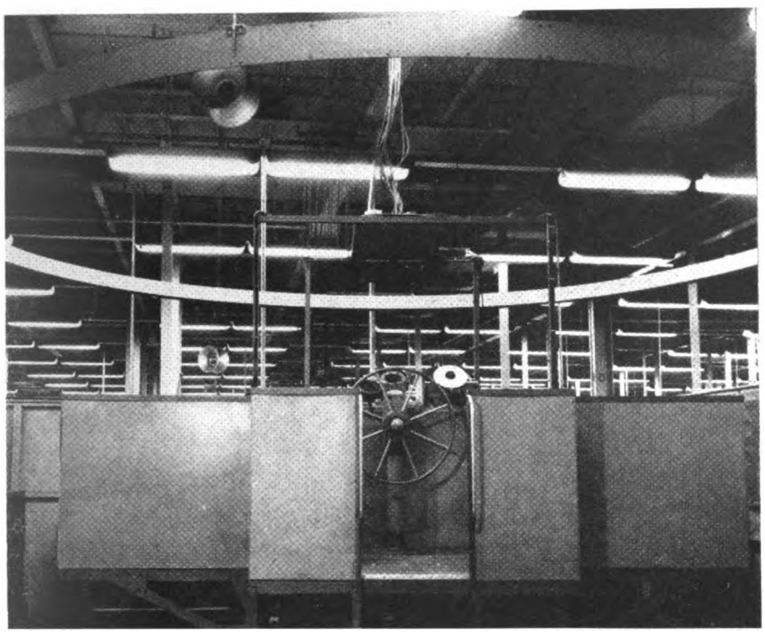
GENERAL ELECTRIC

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SHIP SIMULATOR

SPERRY DRY LAND FLEET



Ship's bridge structure of the Simulator weighs one and a half tons. Overhead compass scale 20 feet in diameter permits large groups to observe steering performance. Electronic adjustments permit Simulator to be substituted for anything from a 50-ton yacht to a 50,000-ton ship.



Sperry's Senior Project Engineer, RICHARD SCHEIB at the controls of the Simulator. The "laboratory ship" has Sperry Gyro Compass, repeater, steering wheel, and rudder angle indicator. The bridge can accommodate twelve people.

Laboratory "bridge" accurately duplicates ship maneuvers at sea for testing gyro equipment.

Where true test conditions for a new product are either difficult or impossible to achieve, simulated conditions in the laboratory often serve as a highly satisfactory substitute.

One such expedient which has become valuable is the Sperry ship simulator maintained in the marine instruments laboratory.

Need for such an equipment arose in 1944 when Sperry was called upon to design a new type of automatic pilot to specifications which could not be met by the existing Sperry gyro-pilot, the familiar metal mike.

To comply with the specifications, the engineers realized that it would be necessary to introduce as a gyro-pilot control function the rate of deviation from course as well as the deviation from course. No data could be found in the Sperry storehouse of information which would permit an estimation of even the order of magnitude of the course error derivative control function. Extensive preliminary sea trials which might tie up the vessel for days or weeks were not possible at the time. It was apparent that, somehow, it would be necessary to simulate the ship's behavior in the laboratory.

There was one encouraging note. It was found that the customer had a limited amount of maneuvering data available which showed the initial and steady state response of the ship to the application of various rudder angles at several ship's speeds. An analysis of this data showed that it was possible to set up a ship simulator in the laboratory. The first simulator consisted of an electronic variable speed drive, which when operated with suitable auxiliary circuits drove a set of dials indicating the heading of the ship. When supplied with rudder-angle information, this simulator was able to duplicate all of the maneuvering data available for the ship under consideration. The first simulator was developed in less than a week.

One of those who has been directly connected with all phases of the ship simulator from its inception to the present time is Senior Project Engineer Richard Scheib.

Not until the new automatic pilot was sea tested did the engineers know that their simulator had permitted the determination of the gyro-pilot control functions to within 10% of the values selected in the laboratory.

Such a small margin of difference was highly gratifying, and plans were started immediately for a more versatile and complete simulator. It was completed in 1945 and has been in almost constant use since then.

The present equipment has "substituted" at various times for vessels varying from a 50-ton pleasure yacht to a 50,000-ton ship. It was used recently to study data on Mississippi River towboats.

The simulator layout is predominated by the ship's bridge structure, which has a rotating weight of about 1.5 tons. It is equipped with a Sperry gyro compass, and the usual bridge equipment such as a steering wheel, compass repeater and rudder angle repeater. It is large enough to accommodate up to 12 persons during demonstrations. An over-head compass scale, some 20 feet in diameter, is provided to permit large groups to observe steering performance during demonstrations.

The bridge structure is rotated by a 0.1 horsepower Ward Leonard variable speed drive, giving a turning rate up to 6° per second. The bridge orientation is detected by the gyro-compass. The compass sup-

(Continued on Page 48)

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18,000-ton tanker S. S. *Olympic Games* built by Bethlehem's Sparrows Point Yard

FIRST...ALL WAYS

First tanker of her type to get into service, the *S. S. Olympic Games* was constructed by Bethlehem's Sparrows Point Shipyard in 227 days. Although she's yacht-like in appearance, this craft has large volumetric cargo capacity and deadweight, combined with the qualities which will permit her owners to enjoy maximum economy in both operating and maintenance costs. Best of all, this 18,000-tonner has those characteristics which make her an outstanding example of American shipbuilding skill because she's "Bethlehem-Built."

SHIPBUILDING YARDS

QUINCY YARD
Quincy, Mass.

STATEN ISLAND YARD
Staten Island, N. Y.

BETHLEHEM-SPARROWS POINT SHIPYARD, INC.
Sparrows Point, Md.

BEAUMONT YARD
Beaumont, Texas

SAN FRANCISCO YARD
San Francisco, Calif.

SAN PEDRO YARD
Terminal Island, Calif.

SHIP REPAIR YARDS

BOSTON HARBOR
Atlantic Yard
Simpson Yard

NEW YORK HARBOR
Brooklyn 27th St. Yard
Brooklyn 56th St. Yard
Hoboken Yard
Staten Island Yard

BALTIMORE HARBOR
Baltimore Yard

GULF COAST
Beaumont Yard
(Beaumont, Texas)

SAN FRANCISCO HARBOR
San Francisco Yard
Alameda Yard

SAN PEDRO HARBOR (Port of Los Angeles)
San Pedro Yard

SHIPBUILDING...SHIP CONVERSION...SHIP REPAIR...NAVAL ARCHITECTS AND MARINE ENGINEERS

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THE SOCIETY OF PORT ENGINEERS

LA and SF Engineers See Illustration of Regulators

J. E. Callahan, manager of the Westinghouse Electric Corporation Micarta Works at Trafford, Pa., will talk on "Laminated Plastic Marine Bearings" at the March meeting of The Society of Port Engineers, San Francisco; on the second of this month.

For the April meeting, Marshall T. J. Garlinger, United States Army Transport Corps, chairman of the program and educational committee of the Society, has arranged for J. E. Crose of the Gisholt Machine Co., San Francisco, to discuss dynamic balancing of steam turbine rotors and spindles, centrifugal pumps, generators, motors, armatures, gears and other rapidly-revolving machinery members aboard ship.

Copes feed water regulators were discussed and illustrated at the February meetings of both the San Francisco and Los Angeles societies of port engineers by David Mergenthaler, associated director of research for the Northern Equipment Co., Erie, Pennsylvania, manufacturers of the Copes equipment. This company is represented on the Pacific Coast by C. C. Moore & Co., Engineers.

Special entertainment at the San Francisco meeting was furnished by the very good singers from The Society for the Preservation and Encouragement of Barber Shop Quartette Singing in America, Inc.

Northwest Engineers Discuss AC Versus DC Welding

Speaking on the subject of AC arc welding D. R. Coles, welding engineer, Westinghouse Electric Corporation, addressed the Society of Port Engineers of Puget Sound at Seattle on January 12, and the Columbia River area Society on January 13 at Portland. A talking motion picture in color illustrative of advantageous use of AC arc welding was used to amplify the address.

In his remarks Mr. Coles said: "Even though the AC welder has been manufactured since about 1920, it has been put to very little use because of the lack of suitable electrodes. It is well known the first arc welding was done with bare electrodes. To this day it is very difficult to weld with a bare rod on an AC welder. On the other hand it is very easy with the DC welder.

"The first coated electrodes operated on either AC or DC. However, it was found that with these rods it was not the easiest thing in the world to weld in the vertical and overhead positions. A short time later a coated electrode was developed which would operate only a DC welder set on reverse polarity. This rod did a nice job on the vertical and overhead positions. As a result, AC welders lost their temporary equal position with DC welders.

"About 1941 or 1942, the manufacturers of electrodes were able to bring out a suitable electrode that not only would operate beautifully on an AC welder in all positions, but would operate in a superior manner on a DC welder in comparison with the existing electrodes. As a result, the AC welder was again on its way to be the dominant source of power in the arc welding field.

"The question may come to your mind: if AC welders were so popular in '41 and '42, why weren't they used more during the war? There are several answers to this question; the principal ones being:

(1) DC welding has proven itself, and it seems best to use it from the safety standpoint, rather than try something that appeared to be better untried.

(2) With an AC welder it is necessary to connect the ground lead within 20 to 25 feet, from where the welding is being done to minimize the voltage drop. This is not necessary with a DC welder as the current flows in one direction and very little resistance is encountered. Scarcity of welding cable during the war made it necessary to conserve as much as possible.

(3) The available supply of men capable of welding at the start of the war were familiar with DC welders and not with AC welders. As these were the men used to teach the initial groups who learned welding at the start of the war, it was more practical to use DC machines than waste time.

"The few AC welders that were used in particular spots during the war proved the machine to be superior in all respects on ferrous materials and, as a result, since the war ended there has been a mass swing to AC.

"Following are some of the advantages AC welders and welding have over DC:

(1) "Lower Initial Cost.

(2) "Lower Power Consumption. It can be said that an AC welder draws power only when an arc is going. It does draw a small amount of power during off-arc time, but it is so small that it can hardly be measured. A DC welder draws the same amount of power regardless of whether an arc is going or not. This is the result of the driving motor running constantly. When one stops to realize that an AC welder has 90 to 95 per cent efficiency, plus the fact it is a rare occasion when a welder is welding more that 50 per cent of the time, it is plain to see that an AC welder is much cheaper to operate than a DC from a power standpoint. In many plants it has been found that power costs are cut to a third of that formerly paid for the pleasure of operating DC welders.

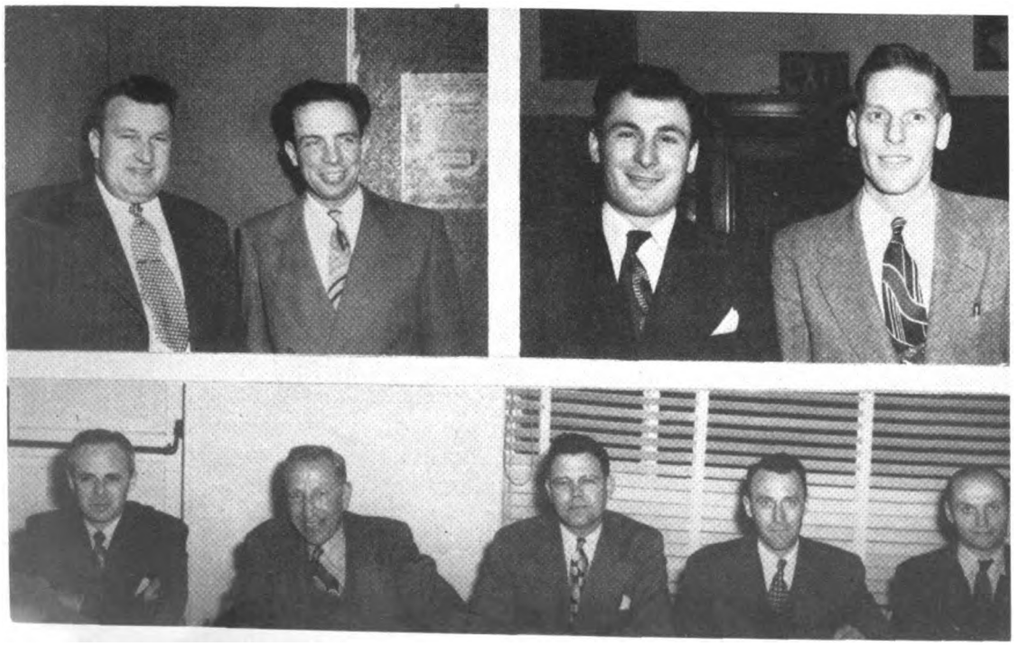
(3) "Lower Maintenance Costs. A DC welder consists of many high speed moving parts subject to normal wear and tear. In comparison, an AC welder hasn't any moving parts except the movable

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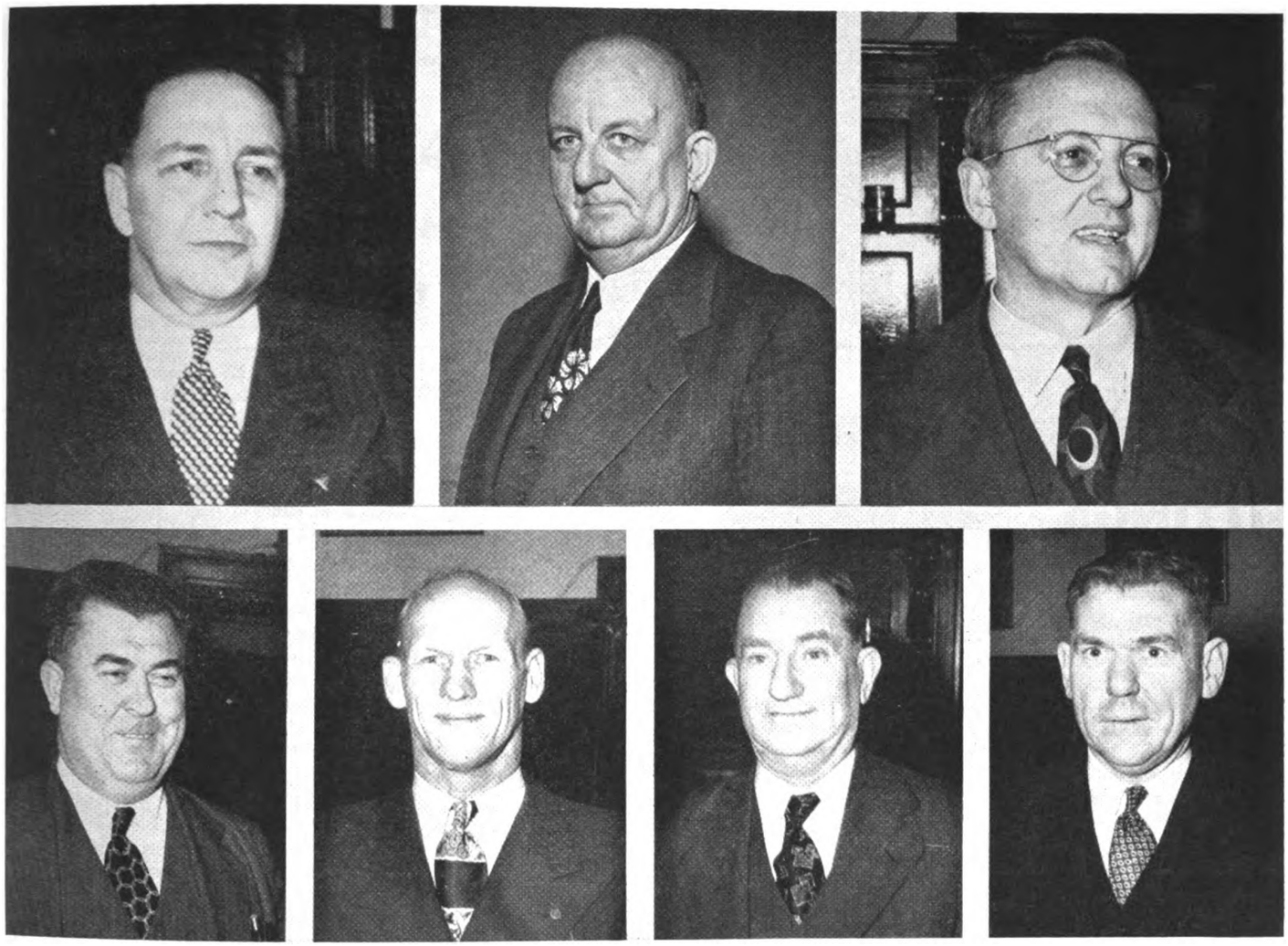
THE SOCIETIES OF PORT ENGINEERS . . . Top row, left: Pacific Northwest—DON COLES, Westinghouse Welding Engineer, who addressed both the Puget Sound Area and Columbia River Area engineers; C. D. SINGER, Port Engineer, Westinghouse Electric Corp., Seattle.

Top row, right: The Society of Marine Port Engineers, New York, have two new members, ROBERT CAVALL, JR., Port Engineer, United Tankers Corp.; and R. W. STETSON, Service Engineer, DOWELL, Inc., Assoc. Member.

Bottom row, left to right: Speakers' table at February meeting of San Francisco Port Engineers: LT. COL. GORDON CORNELL, Officer in Charge of Maintenance and Repair of the United States Army Water Division of the Transportation Corps at Fort Mason; BOB STREIFF, Pacific Tankers, President of the Society; DAVID MERGENTHALER, Northern Equipment Co.; WALTER B. HILL, C. C. Moore & Co., Engineers; and GEORGE H. HARLAN, United States Army Transport Corps., new Secretary of the Society.



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NEW OFFICERS of the Society of Marine Port Engineers, New York, N.Y., Inc. (top row) F. W. GAINES, Superintendent Engineer, Tankers Company, President; R. C. HARTMANN, Port Engineer, Moore-McCormack Lines, First Vice President; and C. N. GUCKERT, Port Engineer, Robin Line, Second Vice President.

NEW DIRECTORS of the New York Society are: (second row) E. W. CALMER, Grace Line; J. B. SPRINGS, Standard Oil Company of New Jersey; W. P. DURGIN, Seiling & Jarvis; and G. F. FARNSWORTH, Socony-Vacuum Oil Co.

N. Y. PORT ENGINEERS ELECT NEW OFFICERS

At the annual meeting of the Society of Marine Port Engineers, New York, N.Y., Inc., held January 19, 1949, F. W. Gaines was elected president for the year. Mr. Gaines, who served as first vice president in 1948, is superintendent engineer of The Tankers Company. He succeeds B. C. Edwards, general superintendent of Agwilines, Inc., who served two yearly terms as president of the Society. Other newly elected officers are listed in the captions above.

Holdover members of the Board of Directors include: E. J. Tracy, Agwilines, Inc., who was reelected chairman of the board; J. S. Jackson, Polarus Steamship Co.; T. T. McTaggert, Standard Oil Company of New Jersey; H. S. Cable, Isthmian Steamship Co.; H. W. Mikkelsen, A.T.S. Co.; C. W. Clarke, Waterman Steamship Co.; J. V. Mulcahy, Robin Line; and Guy Bennett, Standard Oil Company of New Jersey.

The first dinner dance planned by The Society of Marine Port Engineers New York, N.Y., Inc., will be held in the Century Room of the Hotel Commodore, New York, on Friday evening, April 29th.

A large attendance is expected. Reservations are available to members through A. C. Lanteri, chairman of the reception committee, at the Society's headquarters 114 Liberty Street, Room 704.



WILLIAM RICHARDS, Vice President, The Dampney Company of America, was re-elected Secretary-Treasurer of the Society.

Northwest Port Engineers

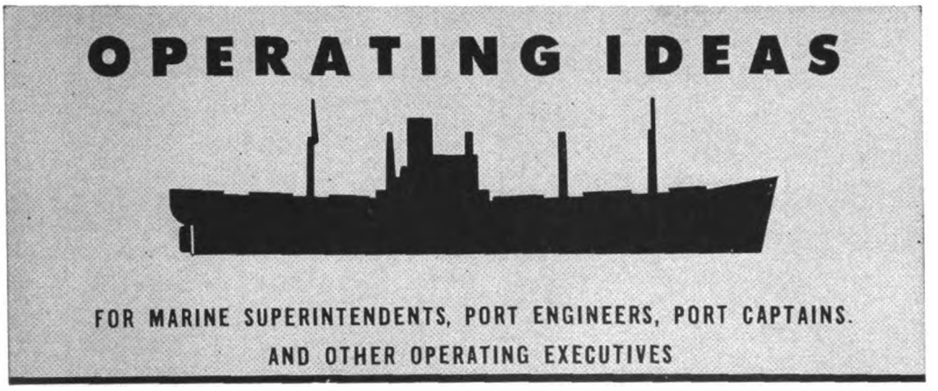
(Continued from Page 40)

core or coils to vary the current output. Common sense indicates that the DC welder will cost considerably more to keep in operating condition than an AC welder.

(4) "Absence of Magnetic Arc Flow. Because a DC welder produces current that is constantly flowing in one direction, a magnetic field builds up around

(Continued on Page 49)

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STRESSES IN RIGGING FITTINGS

By DANIEL T. MALLETT
Naval Architect
George G. Sharp

The old saying that a chain is no stronger than its weakest link applies particularly well to cargo handling gear. Frequently booms are shifted from one hatch to another and often from ship to ship. Occasionally it is convenient to use a 10 or 15 ton boom to burton loads of 5 tons or less, with the result that when gear replacements are made they are apt to be of 5 ton boom proportions. All of these conditions, if not properly handled, eventually lead to considerable confusion as to what the safe capacity of a boom actually is. Serious accidents can happen when a 15 ton boom (with a piece of 5 ton gear somewhere along the line) is used to handle a 15 ton load.

Unless the ship operator is certain of the origin and status of all of the cargo gear aboard his ship, the safest procedure is to check all items before assigning a safe load to any boom. After the safe capacity of a boom has been determined, future replacements must be carefully supervised.

In the July 1948 issue of The LOG there appeared an article by the author entitled, "How to Figure Stresses in Cargo Handling Gear." That article dealt with stresses in masts, kingposts, standing rigging and booms. It is suggested the reader first familiarize himself with the material presented in the July LOG in order to have a more complete picture of the entire problem of stresses in cargo gear.

The purpose of the present article is to illustrate the method of estimating the safe loading for the more common types of rigging fittings.

Blocks and Running Rigging

Blocks manufactured by any of the well-known marine supply houses can be safely assumed to have strength consistent with the size and type of running rigging for which they are specified. Occasionally special type blocks are designed in the drafting room, but since they are the exception rather than the rule, we will not consider them in this article. The problem thus boils down to determining the proper size and type of running rigging, since the blocks are then automatically cared for.

For estimating the required strength of a cargo fall, or a topping lift which spools on a winch drum, it is best to be guided by the maximum winch pull rather than the load to be handled. The reason for this is that the pull at the winch may readily exceed the actual load, due to friction in the blocks as well as the additional force required to accelerate the load.

For example, many of the modern electric cargo winches designed for 5 ton booms have a maximum pull of approximately 6700 pounds. Using a safety factor of five (5), the cargo fall should have a breaking strength of not less than 5 x 6700 or 33,500 pounds. A 6 x 19 mild plow steel wire rope ¾ inches in diameter having a breaking strength of 37,400 pounds would be suitable. It will be noted that the 6700 pound winch pull cannot handle 5 tons on a single whip. The usual practice is to burton up to 3 tons on a single part and then rig for two part tackle on lifts of 3 to 5 tons, using the same wire rope.

Fittings

From the standpoint of stress calculations, cargo gear fittings will usually be found to fall into three main classifications—namely, shackles, links, and goosenecks.

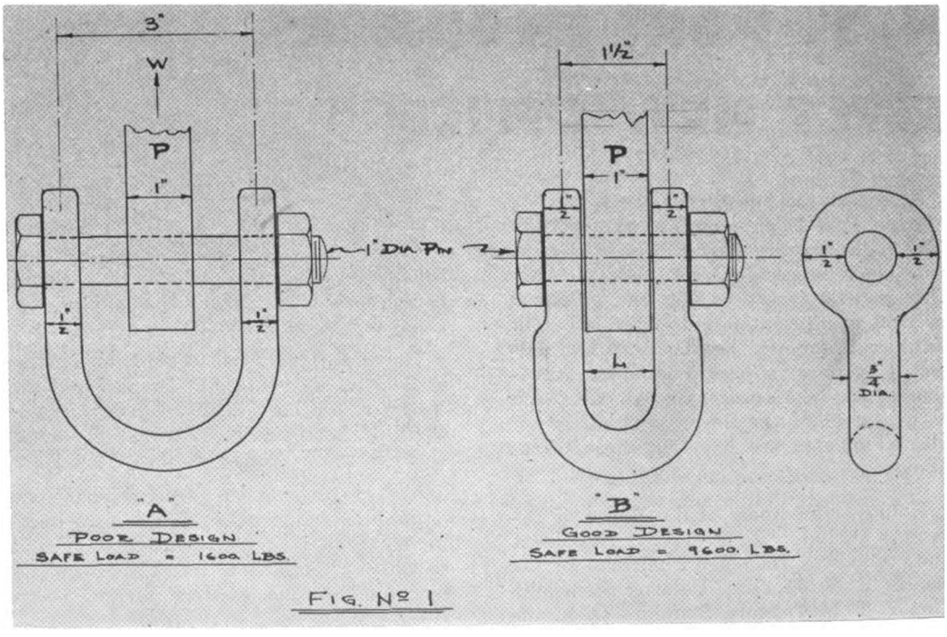
1. SHACKLES. This is the largest group and includes all types of fittings comprised of a jaw and a pin, such as the ends of turnbuckles, boom heel fittings, blocks with jaw and pin connections, clevises of all types, and, of course, the common shackle itself, just to mention a few.

Figure No. 1 illustrates this type of problem. The shackle can fail in four ways—bending of the pin; shearing of the pin; bearing or rupture of the shackle eyes which hold the ends of the pin; (the member which rides on the center of the shackle pin can fail in bearing or rupture); and tensile failure of the body of the shackle.

In actual practice the strength of a standard shackle is not computed in the drawing room, but is selected from the manufacturers table of breaking strengths for various shackle sizes. However, Figure No. 1 will satisfactorily demonstrate the principles involved when it is necessary to design shackle type fittings which are not standard items.

Let us first consider the bending stress in the shackle pin. The most severe assumption is to consider the pin as a simple beam with a concentrated load in which the bending moment is equal to WL.

—— In Figure No. 1A the length of the



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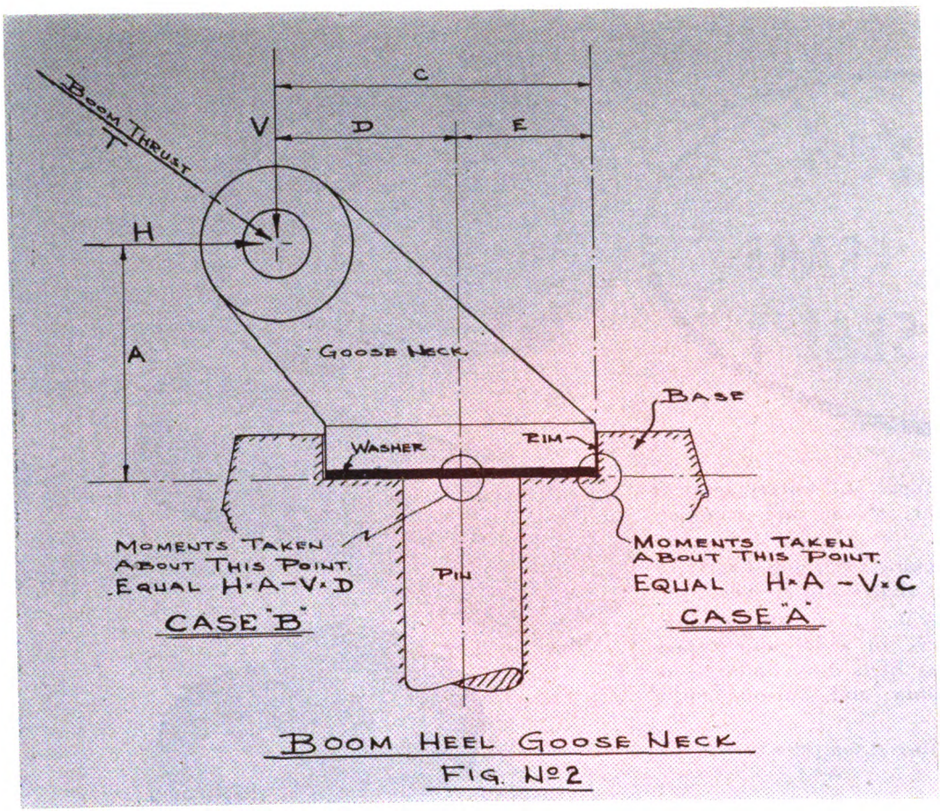
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BOOM HEEL GOOSE NECK

FIG. Nº2

pin is 3″ and the load carried by the shackle is 3200 pounds. Thus the bending moment at the center of the pin is equal to $\frac{3200 \times 3}{4}$ = 2400 inch pounds.

The bending stress is equal to the bending moment divided by the section modulus of the pin; equals 2400 ÷ 0.1 = 24,000 pounds per square inch.

In Figure No. 1B the pin length is 1½″ instead of 3″, hence the bending moment is reduced to $\frac{3200 \times 1.5}{4}$ = 1200 inch pounds and the bending stress is correspondingly reduced to 12,000 pounds per square inch. Briefly, by making the pin one half of its former length, the bending stress in the pin has been cut in half.

In the design of rigging fittings for marine use it is standard practice to employ a factor of safety of five (5) based on the 60,000 pounds per square inch breaking strength of mild steel. This limits the safe bending stress to 12,000 pounds. Thus the shackle shown in Figure No. 1A would be judged unsafe for the 3200 pound load, and its load would have to be reduced to 1600 pounds. The one in Figure No. 1B, with the short pin, would be safe for 3200 pounds.

Practical experience and test results indicate that a shackle of the proportions shown in Figure No. 1B is able to carry a greater load than the bending moment formula for a concentrated load allows. When the center blade "P" fits snug between the shackle jaws, the loading on the pin more closely approximates that of a uniformly loaded beam, in which case the bending moment formula becomes $\frac{WL}{8}$; where W is the unit loading on the pin and L is the spacing between jaws. For a safe working stress of 12,000 pounds per square inch, the maximum allowable bending moment is equal to 12,000 times the section modulus 0.1 or 1200 inch pounds. Equating this to $\frac{WL}{8}$ and solving for W, the safe load is found to be 9600 pounds.

It should be emphasized that the uniformly loaded beam formula can only be applied when the space between the jaws is well taken up by the pad eye. It is also desirable to have the pin a reasonably close fit in the pad eye hole. It may be seen from all of the above considerations that it is good practice to proportion shackle and pad eye to obtain a close fit, and thus to obtain maximum strength.

Let us next consider the shearing stress in the pin. The load tends to shear the pin on either side of the blade or pad eye "P." Thus the pin is said to be in double shear which means that the total load carried by the shackle is divided by twice the sectional area of the pin to obtain the unit shearing stress.

The area of a one inch diameter pin is equal to .785 square inches. Thus the unit shearing stress in the pin for a total load of 9600 pounds is equal to $\frac{9600}{2 \times .785}$ = 6115 pounds per square inch. This value is well below the safe allowable stress of 9000 to 10,000.

It should be noted that a shackle pin is always in double shear, as compared to a rivet in a lapped plating seam, which is in single shear. This enables the shackle pin to withstand twice the shearing load of the rivet of equal diameter. This consideration is partly responsible for the "U" shaped design of the shackle, rather than merely joining two lapped pad eye plates by means of a through bolt.

The next problem of shackle design which we shall examine is that of bearing pressure. Referring again to Figure No. 1, it will be noted that the thickness of the pad eye blade "P" is 1 inch. The bearing area of the blade is equal to its thickness times the diameter of the pin; or 1 inch times 1 inch equals 1 square inch. Thus the bearing pressure on the pin, or on the blade, is equal to the load divided by the area. Assuming a 9600 pound load, in Figure 1B, the unit bearing pressure becomes $\frac{9600\ \#}{1}$ = 9600 pounds, which is within the safe limiting value of 10,000 pounds per square inch.

In a properly proportioned shackle, the thickness of each jaw should be one half of the pad eye blade thickness so that the unit bearing pressure is the same in way of the jaws as it is at the pad eye, see Figure No. 1.

The final problem of shackle design we will consider is that of tensile stress. The two eyes in way of the pin hole have a total sectional area of ½″ x ½″ x 4 = 1 square inch. Thus, for a 9600 pound load the unit stress is 9600 pounds per square inch.

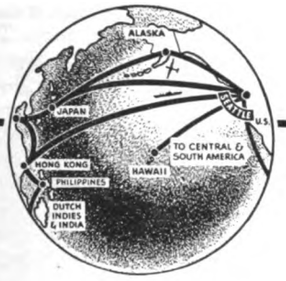
The total sectional area of the two ¾″ diameter sides of the "U" shaped body of the shackle $= \frac{2 \times \pi \times .75^2}{4}$ = .88 square inches. This area divided into the total load of 9600 pounds gives a unit tensile stress of 10,900 pounds per square inch, which is within the safe limit of 12,000.

2. LINKS. The design of link type fittings, such as pad eyes used to secure vang tackles to the deck or the bulwark, is relatively simple. Each side of the link is assumed to carry one half of the total load. Thus the total load divided by the sectional area of both sides of the link, gives the unit tensile stress. To obtain a safety factor of five (5) in conjunction with mild steel, the unit stress should not exceed 12,000 pounds. Since this type of fitting is subjected to considerable chafing and wear, it is good practice to select a link slightly larger than the stress figures would indicate.

An important consideration in the design of link fittings is to make certain that the link is free to fall into line with the load for all anticipated operating conditions. The parts which connect to the link should have smooth rounded surfaces which will bear evenly against the link.

3. GOOSENECK FITTINGS are confined largely to boom heel swivels. Variations of this fitting are sometimes used for a trunnion type topping lift attachment mounted on the top of a derrick

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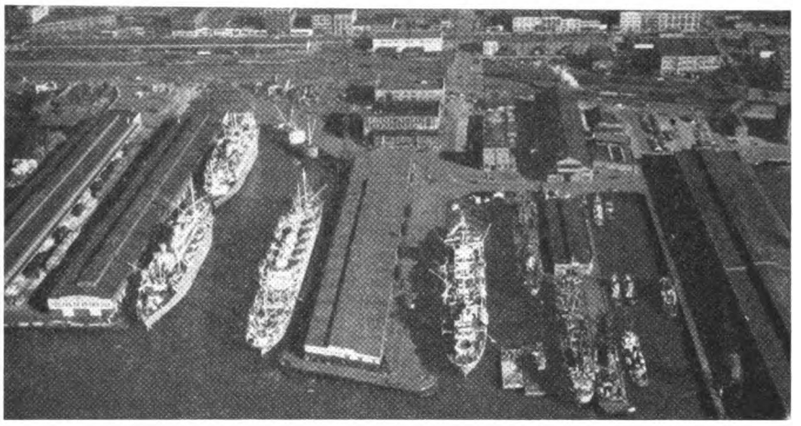
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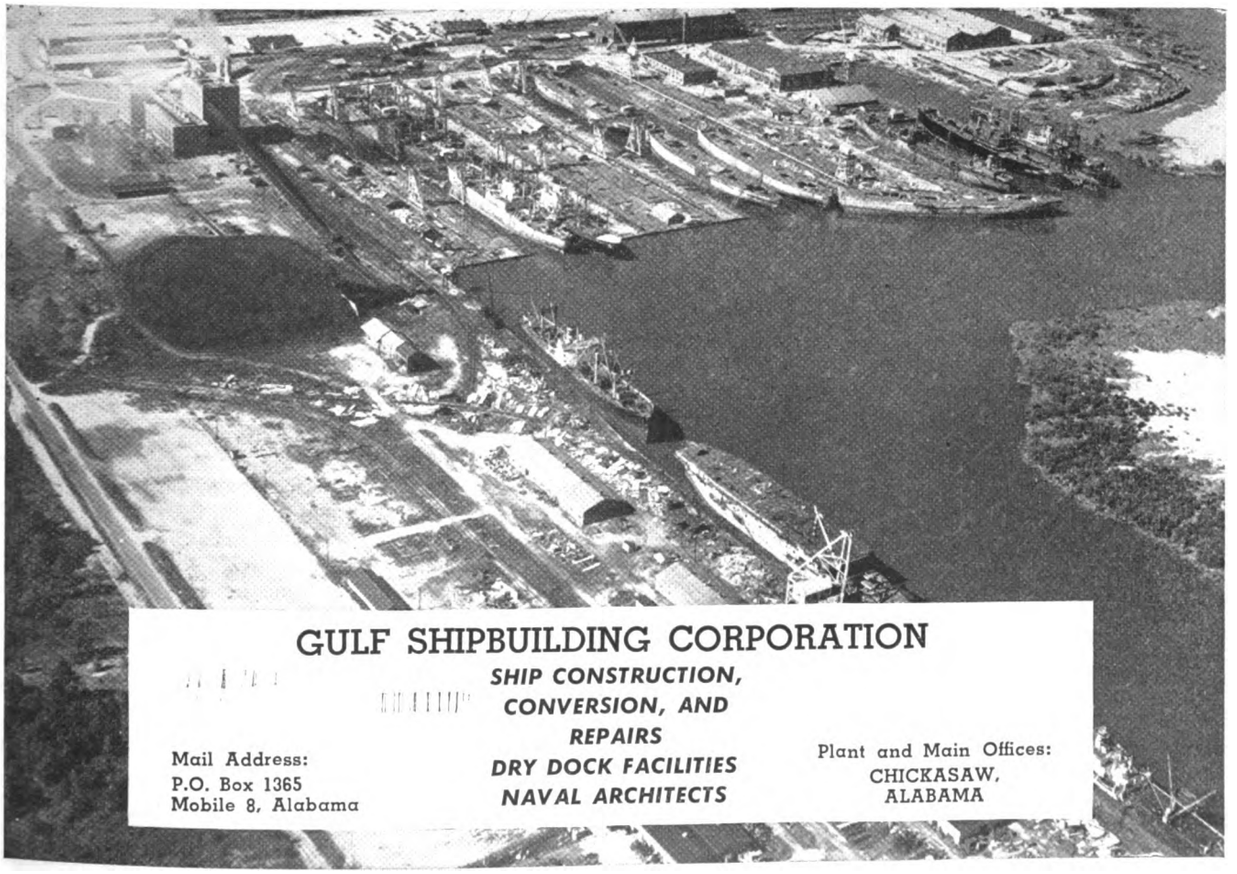
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post. Regardless of its application, the method of computing stresses in the fitting is basically the same.

Figure No. 2 illustrates this fitting. "T" represents the line of action of the boom thrust; "V" and "H" are, respectively, the vertical and horizontal components of the boom thrust. The primary problem is to evaluate the stresses in the vertical pin member of the gooseneck. This is done by summing up the moments of the forces involved.

The choice of the point about which the moments of the forces are taken depends upon the design of the fittings. For example, if the rim of the gooseneck bears against the wall of the recess in the base member, then moments are taken about that point, as shown in case "A" of Figure No. 2. However, if the gooseneck rim does not bear against the wall of the recess, or, if there were no recess in the base member, then the load would come entirely on the vertical pin, and moments would be taken about the center of the pin, case "B."

If moments are taken about the gooseneck rim, their sum is equal to H x A minus V x C. To resist this overturning moment, the pin must exert a downward force equal to $\frac{H \times A - V \times C}{E}$. This force is the tensile load on the pin and the unit tensile stress equals this load divided by the sectional area of the pin. Since the pin is in tension its lower end must be well secured to the base member. This is usually done by threading a large nut on the end of the pin.

In case "B," the sum of the moments equals H x A minus V x D. In this instance the vertical pin member must resist the overturning moment by exerting an equal and opposite moment. Thus the pin resembles a cantilever beam and the bending stress in it is equal to H x A — V x D, all divided by the section modulus of the pin.

Since, in Case "B," the gooseneck rim does not receive any lateral support from the base member, the vertical pin must also resist the shearing action caused by the horizontal component of the boom thrust. The shearing stress equals H, divided by the sectional area of the pin. This means that the pin is subjected to a combination of bending and shearing stresses. In most designs this combined stress, of Case "B," will turn out to be a more severe requirement than the direct tensile stress found in Case "A." For this reason, Case "A" is the preferable design, and is generally found on heavy lift booms.

Another point of interest in the design of a gooseneck is that by shaping it as shown in Figure No. 2 the line of action of the boom thrust tends to pass through the center of the vertical pin. This reduces the overturning moment and accordingly reduces the load on the vertical pin.

The jaw pin through the gooseneck eye, and the boom heel, is designed in the manner described for the shackle pin in Figure No. 1.

In conclusion, the author wishes to emphasize that the aim of a good design is to make certain that each and every part of a set of cargo gear is of consistent strength and of adequate factor of safety.

NEW FEED WATER HEATER CUTS REPAIR COSTS

The C-4 vessel third stage feed water heaters which were built during the war required expensive and too frequent repairs to tubes and other component parts. The wartime third stage heater was designed to save fabrication time and as a result the shell was welded securely to the two tube sheets. This type of construction makes it difficult to make internal repairs, as any access hole flame cut, or otherwise cut into the shell, must be made in accordance with latest rules and regulations of the United States Coast Guard for unfired pressure vessels. The U. S. Coast Guard rules limit the size of the access holes and this in turn aggravates the difficulty of access to the interior of the shell, tubes, baffles and other parts.

In order to obviate difficulties in connection with this heater, a new design has been made by P. H. Thearle, superintending engineer, U.S. Army Transport Corps., San Francisco, and his assistant, M. T. J. Garlinger, which incorporates a number of novel features. The end section of the shell can be removed as the new design is based on a single tube sheet feature. The tubes can be examined at any time by removing the bolted end section. In addition to this feature, the entire tube nest bundle can be removed from the shell and a new tube nest bundle installed. Another feature included in the design is that the water passes through three hairpin tubes. Thus it is seen that the feed water makes six complete passes through the heating steam in the shell. The original design incorporated a small water leg which caused the condensate trap connected to this water leg to cycle with too great frequency. The new heater is designed with a large water leg. This water leg, by the way, is the identical size and shape of the steam dome on top of the heater. In the original design, due to high feed water pressures averaging 700 p.s.i.g., doming or dishing occurred in the tube sheet. The doming or dishing opened up passages between the barriers and the tube sheets, allowing the feed water to completely bypass its proper path of six passes through the heating steam. Corrective measures such as deep heavy welts were employed in order to prevent doming or dishing of the tube sheet.

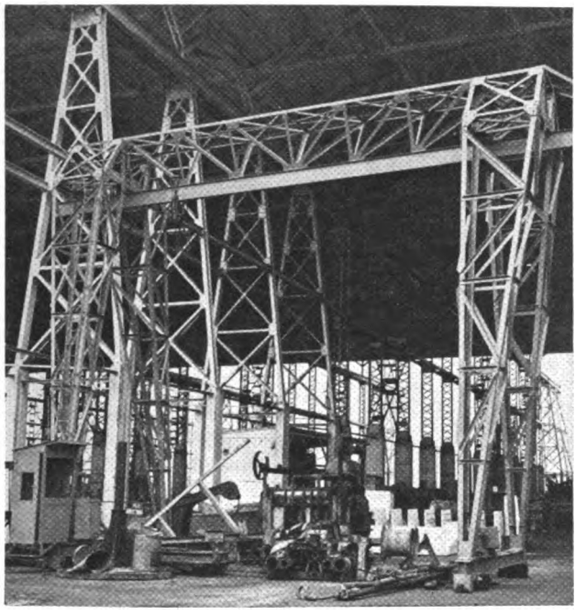
The new design of feed water heater has been called the "Hairpin Tube Type," and this new type is made with identical bolting for feed water inlet, feed water discharge, heating steam inlet, condensate drain and the seating or foundation bolting. The U. S. Army, Water Division, TC Fort Mason, San Francisco, has ordered several of these units for installation in the U. S. Army Transport vessels. In addition to the orders for complete third stage feed water heaters, the Army has ordered two complete tube nest bundles for shore based spares which can be readily placed in the third stage feed water heater in a short time. This last mentioned feature is of great importance when it is desired to expedite the tube work in order to bring the lay-up time of the vessel to a minimum.

In the original design, several days were required to cut the hole in the side of the shell, remove the tubes and to prepare the tube sheets for the new tubes. In addition to this, additional time is required to retube the third stage feed water heater. Experience gained in many repair jobs has dictated that the retubing of the wartime design third stage feed water heater could be carried out to good advantage if the complete heater had been removed from the ship and placed in the contractor's shop. With the new design it will not be necessary to remove the heater from the vessel for repairs. The wartime design required that the tubes would not roll on both ends into the two tube sheets and cause their differential expansion between the shell and the tubes. It was necessary to fabricate a flexible bellows in the shell. The new design obviates the bellows and makes for a neater and more satisfactory job. The new heaters will ordinarily be installed in a vessel when repair items require work to be accomplished on the existing wartime design third stage feed water heaters.

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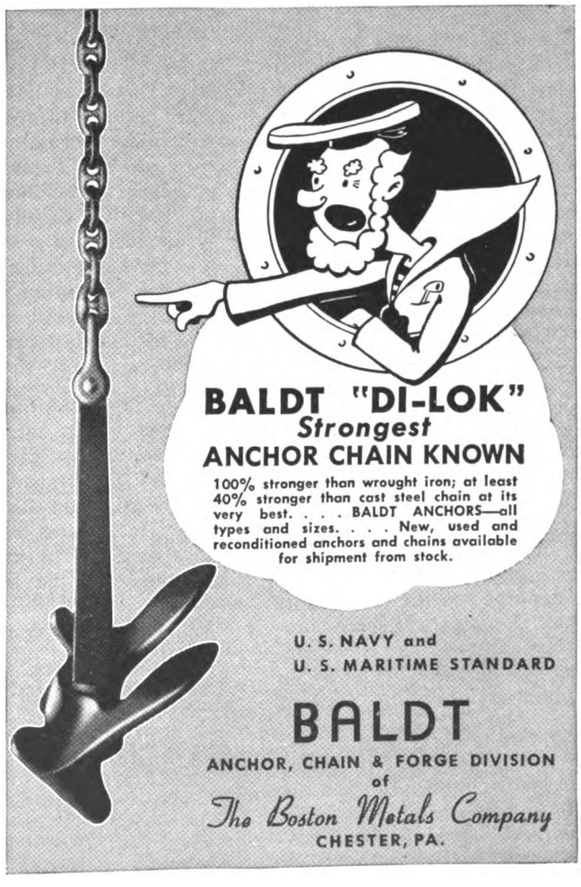
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GRACE USES NEW CABLE DEVICE FOR CARS AND DECK CARGO

An adjustable cable, patented by Kenneth L. Peck of Peck & Hale, Sayville, Long Island, has recently been installed by Grace Line in the garages of the SANTA ROSA and SANTA PAULA. Already used by airlines for lashing cargo, Grace Line is the first steamship company to test the cable on shipboard. Although it will be employed at first only to secure automobiles in the garages the cable's use will subsequently be extended to on deck cargo as well as the No. 4 hatch on the SANTA CLARA, SANTA MONICA and SANTA SOFIA.

Captain R. E. Pendleton, Grace Line terminal manager in New York has advised that preliminary reports from ship's officers and ports of discharge are highly gratifying. The absence of dunnage scratches, the ease of discharge and the fine behavior of the cable during heavy weather were among the advantages noted in the reports he has received to date. Individual underwriters have commented very favorably on the novel device and it has the approval of the Board of Marine Underwriters of New York.

The standard cable for under deck use consists of a ¼ inch galvanized aircord cable, covered with adjustable ½ inch beads, a toggle to take up the strain after the beads are placed and a rubber covered bridle. Ring-bolts on flush-welded pad eyes are used to secure the cable to the deck while the bridle is attached either to the bumper frames or spring shackles. The average take-up on the binder when locked by a longshoreman is two and a half inches and the downward pull of the cable on the springs is equivalent to that normally exerted when the car is occupied. Each unit of the standard model has a breaking strength of 7000 lbs. Based on the average car's weight there is a safety factor of two to one for any one lashing and eight to one for the installation. The strength is naturally dependent primarily on the cable and for on deck use a ⅜ inch or larger model would be required.

The invention has many advantages of interest to the marine industry. It will lash any type of car from Jeep to Cadillac through adjustment of the beads; it can be locked or unlocked in a matter of seconds; much less maneuvering is necessary to get an automobile in the desired position, and the entire operation of securing an auto for sea has been timed in four and a half minutes.

Sperry Simulator

(Continued from Page 38)

plies heading information to a simulated gyro-pilot, which is universally adjustable so that it can be used to determine the design features of new automatic pilot equipment under development. The gyro-pilot sends rudder order signals to a simulated steering engine which is a small electronic servo capable of adjustment to duplicate the characteristics of most modern steering engines. It actuates the rudder potentiometer according to the desired rudder angle. However, a correction must be applied at this point, and that is the function of the single replaceable part, a cam.

Determining Turning Rate

It is well known that the turning rate of a ship is not proportional to rudder angle except for angles less than 10°. The turning rate at 10° rudder is roughly 60 to 70% of the maximum rate at 35° rudder. This departure from linearity is incorporated in the configuration of a thin sheet metal cam.

It might be expected that a separate cam would be required for each vessel it is desired to simulate. This is generally true, but Scheib makes the observation that one particular cam has proved satisfactory for ships having a ratio of displacements as high as 25:1.

A servo system operated by a photocell, causes the photo-cell to follow the contour of the cam and applies the desired non-linear correction factor to a differential which also receives the simulated steering engine output. The differential output, as applied to the rudder potentiometer, therefore turns the rudder potentiometer through an angle proportional to the maximum turning rate of the ship. Thus the rudder potentiometer supplies a signal proportional to the maximum turning rate of the ship for a given rudder angle rather than a signal proportional to the rudder angle alone.

A ship's speed selector attenuates the above signal and provides for the operation of the simulator at any desired ship's speed. The resulting signal is then passed through a delay network. This network delays the response of the simulator to the application of rudder to obtain an exact duplication of the delay characteristics of the ship. An appreciable time is required for the ship to achieve a constant turning rate following the rudder application of a rudder angle. Families of curves at various ship's speeds form the basis for the present ship simulator.

The final signal obtained from the delay network operates the Ward Leonard variable speed drive at a speed proportional to the voltage across the last condenser of the delay network. The operation of the ship's bridge structure by the variable speed drive completes the loop of this simulation equipment.

Advantages of New Simulator

The present simulator removes several disadvantages of the original simulator. Many ships can now be simulated with the change from one ship to another requiring only the flip of a switch, and occasionally the change of a cam. The accuracy of the original simulator with its ship's heading dials on a laboratory bench was regarded with doubt and suspicion by experienced helmsmen. The difficulty was psychological in nature. By providing a physically large structure, the present simulator allows experienced helmsmen to "feel" the ship's response to their directions.

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The present simulator is limited to the simulation of dynamically stable ships. These are ships that will follow a straight course with rudder amidships, and if disturbed by an impulse will assume a new straight course deviating slightly from the original course. A dynamically unstable ship will, if similarly disturbed, wind up going in a circular path even though the rudder is held amidships.

In 1946, personnel at the Experimental Towing Tank at Stevens Institute formulated the general differential equations of motion for ships in such a form as to permit the determination of the equation coefficients by towing tank tests on models. The results of this work makes it possible now to operate a ship simulator by a differential analyzer, which is required for the solution of a third order equation. The use of the differential analyzer would permit the duplication of the maneuvering characteristics of dynamically unstable ships. Although dynamically unstable ships are not common, they do exist, and the provision of means for simulating this type on the Sperry simulator may be the next improvement of the equipment now in use.

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THE SOCIETY OF PORT ENGINEERS

(Continued from Page 41)

the electrode and causes considerable distortion of the arc, especially in tight corners. Having the arc distorted causes many things which are a definite drawback. Some of them are: incomplete penetration—unsightly appearance—slag and gas are trapped into the weld—and a slower rate of deposit of the metal. Due to the fact that AC has current that alternates 60 times a second, this magnetic field does not build up and as a result the above mentioned faults are not present.

(5) "Faster Rate of Deposit. Mainly due to the absence of magnetic arc flow, an operator is able to use larger electrodes which means an increased rate of deposit. In general one can weld from 20 to 60 per cent faster with an AC than with a DC."

The statement of Mr. Coles regarding AC welders superiority on ferrous materials and ability to weld cast iron brought out a riot of questions from his audiences.

M. W. Felton, Alaska Steamship Company, 1949 president of The Society of Port Engineers of Puget Sound, has announced committee chairmen for 1949 as follows: Legislative, A. Solibakke, Puget Sound Freight Lines; Technical, S. K. Smith, American Bureau of Shipping; Welfare, Charles McMahon, Alaska Steamship Company; Dinner-Dance, Captain L. C. Perry, marine surveyor; House and Program, Alex D. Stewart, The LOG; Public Relations, H. E. Lovejoy, Puget Sound Freight Lines; Picnic, Don C. Wilson, American Bureau of Shipping; Sergeant at Arms, R. R. Askren, Army Transport Service.

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States SS-Pacific Atlantic Announce Personnel Promotions

States Steamship Company and Pacific Atlantic Steamship Co. have announced promotions for several of their executive personnel. J. R. Dant, son of the owner and founder of States Steamship, who has been a director of the two companies for several years has been elected to vice president of States Steamship.

Walter Brennan, vice president of Pacific Atlantic, who has been with the company for some 20 years and for the last several years since his return from service in the Army as a Colonel, has been elected to director of the company.

Both Jack Dant and Walter Brennan are located in the head office at Portland, Oregon.

K. H. Finnesey, district manager at San Francisco has been elected as director of States Steamship in addition to his other duties.

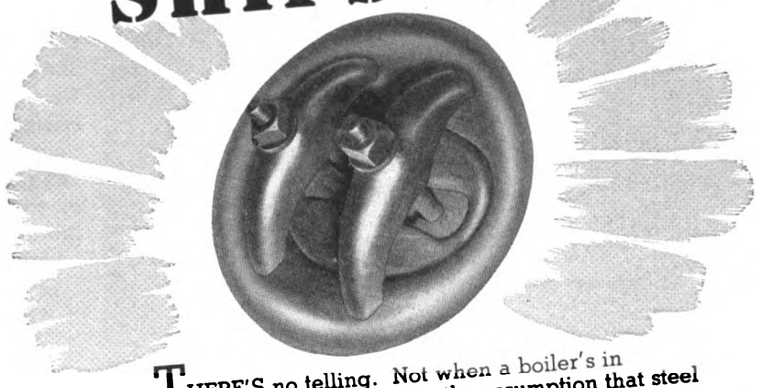
William C. Ricks, Southern California manager, has announced the opening of a San Diego office for States Steamship with Dan A. Sexton in charge. Sexton formerly was with Williams, Dimond & Co.

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South America Grant Awarded Pope & Talbot

Pacific Argentine Brazil Line, wholly-owned subsidiary of Pope & Talbot, has officially signed its operating differential subsidy contract with the Maritime Commission for assistance in its service between the Pacific Coast and the east coast of South America.

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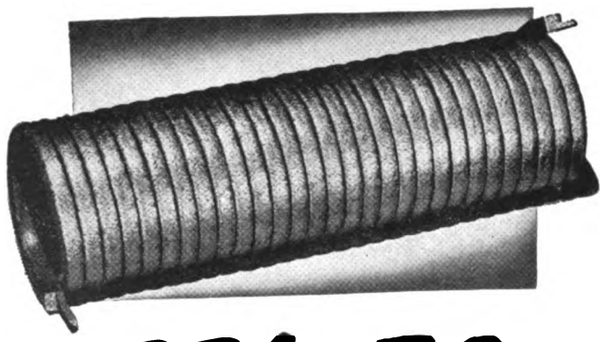
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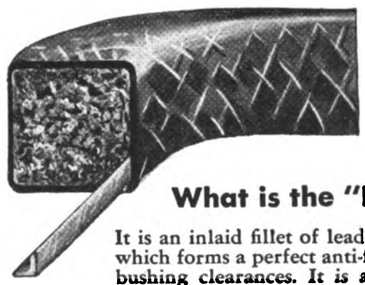
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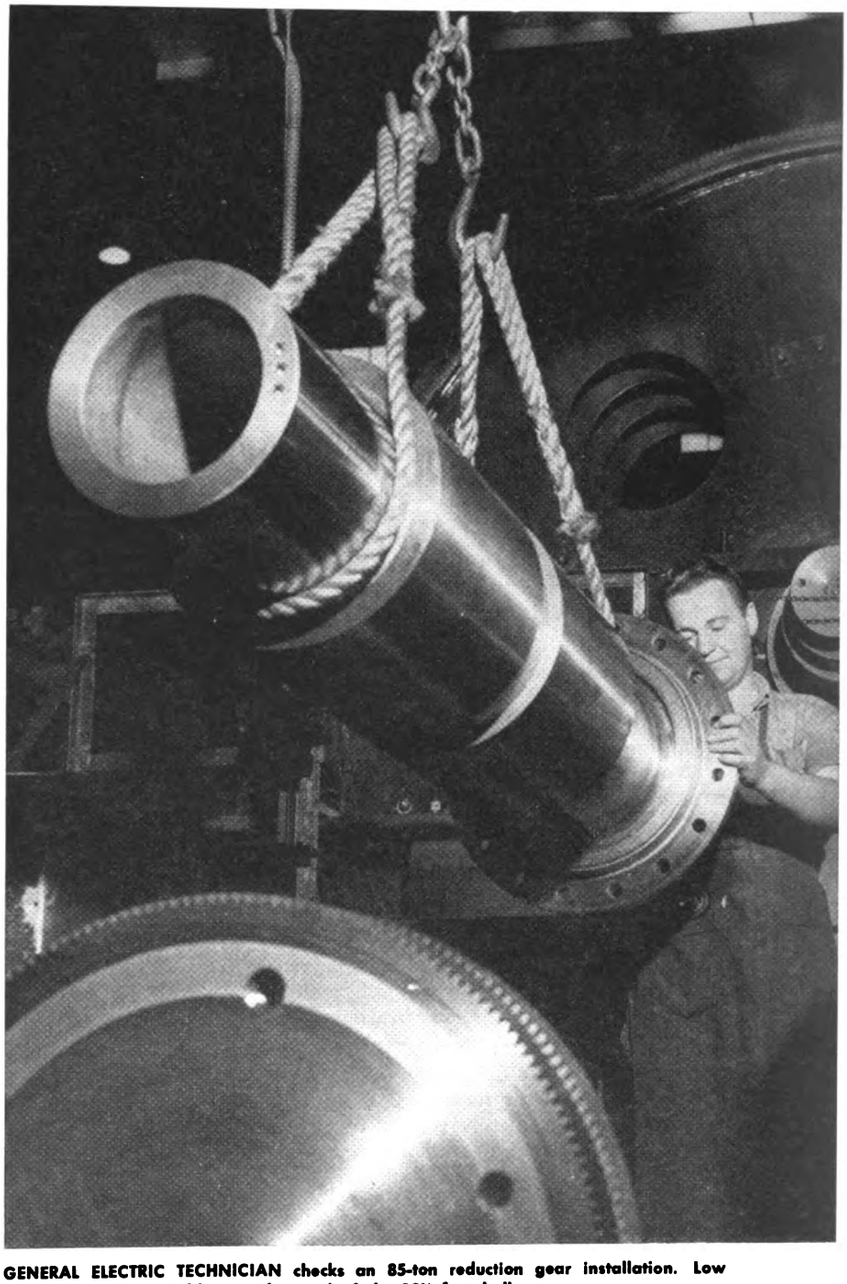
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G. E. GEARED TURBINES FOR SUPER TANKERS

Here are facts and figures on G.E.'s 12,500 shp geared turbines going aboard our new high speed tankers.

By WALTER G. SCARBOROUGH
Aircraft, Federal and Marine Division
General Electric Company



GENERAL ELECTRIC TECHNICIAN checks an 85-ton reduction gear installation. Low speed pinions are visible at either end of the 13½-foot bull gear.

Geared turbine propulsion units being built by General Electric for supertanker propulsion are 12,500-shp at 112 rpm. They are cross compound, impulse turbines consisting of one high-pressure and one low-pressure ahead turbine. An astern turbine, built into the low pressure casing, is an integral part of the low pressure unit. Turbine drive shafts are connected to the single screw through speed reducing gears.

Auxiliary power is furnished by two 400-kw turbine-generator sets supplemented by mechanical-drive turbines for driving cargo pumps, boiler feed pumps and fans. Both types of auxiliary turbines operate off the main boilers. Oil-fired boilers provide normal steam at 850 psig and 850F.

Ahead turbines are capable of carrying rated 12,500 ahead shp at rated 112 ahead rpm, and maximum shp of 13,750 shp at not less than 115.6 rpm. For light draft operation they can operate at maximum shp at not more than 123 propeller rpm.

Turbines are designed to operate at 835 psig at 840F at the turbine inlet with exhaust back pressure of 1.5 in. Hg abs. at the turbine exhaust flange.

Steam flows aft through the HP turbine, forward through the LP turbine and down into a condenser. The HP and LP ahead turbines have eight stages each. The astern turbine has two stages. At normal propeller speed, the HP turbine turns at 7062 rpm, the LP turbine at 3438 rpm. The LP unit weighs 53,800 pounds, the HP unit 14,420 and the reduction gears 175,000. Total for the turbines and reduction gears is 243,220 pounds.

Four openings are used for steam extraction for boiler feed water heating. Non-extraction steam rate for 12,500-shp operation at normal steam conditions is 6.2 pounds of steam per horsepower hour.

Astern Unit

The astern unit is rated to develop 80 per cent of normal full load ahead torque at 50 per cent of rated ahead propeller rpm under normal steam conditions.

Steel turbine casings are annealed and subjected to hydrostatic tests. Pockets are drained to prevent accumulation of water. Metal-to-metal joints are used for all casing joints. Nozzle plates are removable.

Interstage diaphragms have a ring of metallic labyrinth packing to retard steam leakage along the shaft. Diaphragms and rings are split at the horizontal centerline so their top halves may be lifted with the upper half of the turbine casing. Springs hold packing rings in correct radial position.

Each rotor is supported by two ball-seated sleeve bearings. Split at their centerlines, they are lined with babbitt and fitted with steam and oil baffles. Dowelling at unequal distances from the ends of the halves insures proper assembly.

Total thickness of the shell and lining at each end of the bearing is stamped on the shell. Wear is checked by comparing actual thickness with the stamped dimensions.

Oil Distribution System

An oil distribution system integral with the turbine-gear set supplies lube oil to all parts from the ship's lube oil system. Oil from the ship's system is delivered at sufficient pressure to give about 10 pounds gage at the highest bearing in the set.

Turbine rotors are machined from solid

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steel forgings with bucket wheels machined as part of the shaft. All buckets have their outer tips secured to corrosion-resistant bucket covers.

Steel packing boxes on the rotors where they project through the casings are equipped with packing rings held in concentric alignment by springs. These boxes are connected and equipped so steam can be admitted as required to retard air leakage into the casings. To retard leakage of steam from packing boxes to atmosphere, an exhauster system provides a vacuum of about 0.5 in. Hg. A steam seal regulator automatically maintains 3 to 10 psig at each packing box.

External packing boxes are centerline-split so their top halves may be removed without disturbing the turbine casings. This provides access to the packing rings, both halves of which may be removed easily.

The bulkhead mounted maneuvering valve manifold incorporates an inlet steam strainer, an oil-operated ahead governing valve, a hand-operated ahead maneuvering valve and hand-operated astern and astern guarding valves.

Governing System

The governing system limits turbine speed to 115 per cent of maximum designed speed and acts to close the oil-operated ahead governing valve in the main steam line to the HP turbine whenever the lube oil pressure to the bearings drops below a pre-set value.

A governor oil pump driven by the LP turbine is located on the forward bearing standard of that unit. It receives oil from the ship's lube system and discharges it to the bottom of a relay cylinder and piston mounted on the maneuvering valve manifold. As turbine speed changes, discharge pressure of this pump varies. Variations in pressure operate a hydraulic control system to close the governor valve and stop steam flow to the ahead turbine when governing oil pressure reaches the pre-set value. Relationship between pump discharge pressure and turbine speed is adjustable by an orifice in the discharge piping.

Turbines are furnished with the connections necessary for emergency operation of either unit alone. With the LP turbine out of service, an orifice is used to maintain normal back pressure at the HP turbine. With the HP turbine out of service, an orifice between the maneuvering valve and the LP turbine is used to maintain approximately normal LP turbine inlet pressure.

Gears are double-reduction, two-pinion, articulated. The turbine shafts drive high speed pinions which turn two intermediate gears coupled to low speed pinions. These pinions turn the 13½-foot low speed gear. The propeller shaft is connected to this low speed gear.

Main Thrust Bearing

The pivoted, segmental main thrust bearing is housed on the forward end of the low speed gear casing. It can withstand a momentary maximum thrust of twice rated thrust in either direction.

Gears and pinions are double-helical, separate-helices, giving them a herringbone appearance. The low speed gear has a forged steel shaft with supporting web plates welded to the rim. The high speed gears are cast or cast-and-fabricated construction. All gear casings are cut under uniform temperature to insure the highest possible degree of accuracy. Gear casings are welded steel construction. Each gear and pinion is supported by two split sleeve bearings.

The turning gear, mounted at the aft end of one high speed pinion shaft, is motor-driven and is equipped with a clutch fitted with handwheel for operation. An indicating circuit shows when the turning device is engaged. The opposite high speed pinion has a square for application of a ratchet wrench.

Twenty new modern tankers are being fitted with this equipment as built by General Electric as part of the enlarged tanker building program. Some of the equipment has been delivered already and one tanker supplied with this equipment has been launched.

Alcoa Reports Boom Passenger Business for 1948 and 1949

The Alcoa Steamship Company's passenger business in 1948 was the best in the company's history, surpassing even the high mark set last year, it was stated in the annual review released by the company.

The review noted that "during the year Alcoa's passenger ships and passenger-carrying freighters sailed, almost without exception, at full passenger complement."

In discussing passenger trade prospects for 1949, Alcoa declared there was reason to be optimistic. "By maintaining our proposed schedules for next year, and under present economic conditions, the company should conclude an even better twelve-month period by December, 1949," said the report.

Two factors were outlined to support this prediction of increased volume in passenger business. First, Alcoa said it plans to continue weekly sailings of its passenger ships from New Orleans, a program which it declared has proved a successful experiment in the final half of the current year.

The remarkably increased interest in the Caribbean area that has developed among U. S. travelers since the war was noted as a second important contributing factor to a good passenger year in 1949. Alcoa's boom business during this current winter season was cited as a "good example" of this.

Company officials said Alcoa will undoubtedly have to face the possibility of a more competitive year in 1949. But it was pointed out that since Alcoa had placed its faith in relatively small ships, carrying under a hundred passengers, no difficulty was anticipated in sailing these ships at full or nearly full passenger complement in the near future.

The opinion was expressed that the room-with-bath freighter has successfully caught the public eye. The company said that it now operates 13 first class freighters.

LOW PRESSURE marine propulsion turbine rotor.

A G.E. TECHNICIAN burrs a flange hole in a low speed pinion blank.

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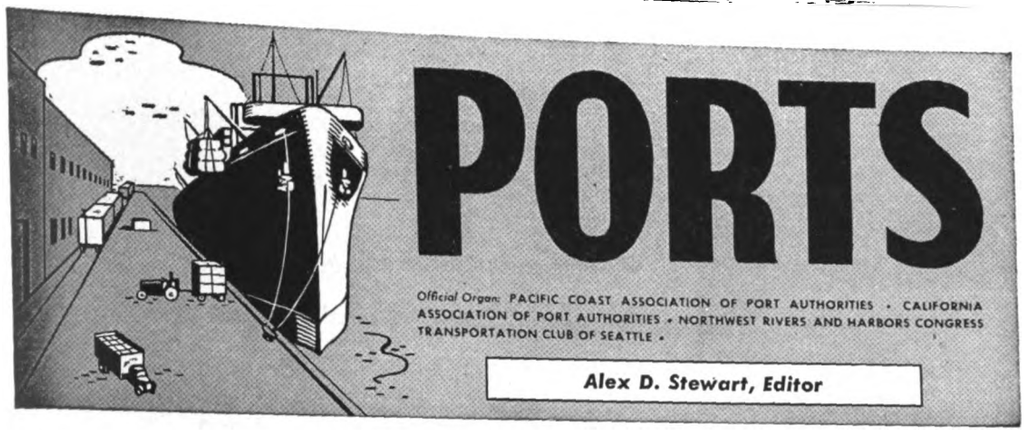
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Lockenberg Made Manager New Orleans Dock Board

Appointment of E. H. Lockenberg as general manager of the Board of Port Commissioners in New Orleans has been announced recently by the board.

Lockenberg, who has held the post as acting manager since Jewell's resignation December 1, will share with two other employes of the port commission the duties formerly discharged by Jewell.

They are J. A. McNiven, chief engineer, and Lewis I. Bourgeois, director of commerce. McNiven assumes the additional duties of director of planning and extension, and Bourgeois those of industrial promotion and public relations.

In announcing the appointments Robert L. Simpson, newly-elected New Orleans Dock Board president, said:

"It was the considered opinion of the entire board that these three men, whose industry and loyalty have been outstanding, will, as a working team, carry the progress of the port to even higher levels."

Lockenberg has been associated with port operations since 1922, when he became superintendent of the public cotton warehouse in New Orleans. From 1940 to 1945 he was supervisor of port operations for the office of defense transportation. He returned to the dock board in 1945 as superintendent of wharves, and on November 1, 1947, he became director of port operations, a post he held until his appointment as acting general manager.

McNiven, who has been connected with the New Orleans Dock Board since 1920, has been chief engineer for the past nineteen years. Bourgeois has been engaged in port activities since 1920.

Besides Robert L. Simpson, other recently-elected officers were R. Kirby Longino, vice president; H. A. Sawyer, secretary, and Earl S. Binnings, treasurer and chairman of the finance committee.

The board announced that H. Grady Meador, whose term of office expired December 6, will remain as board commissioner until his successor is appointed by Governor Earl K. Long.

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Howard Cullman Re-Elected Chairman N.Y. Port Authority

Howard S. Cullman of New York City was re-elected chairman, and Joseph M. Byrne, Jr. of Newark, New Jersey, vice chairman of The Port of New York Authority by commissioners of the Authority. Both officers of the bistate agency were first elected to their posts four years ago and re-elected for three previous terms.

At the same time the board re-elected Austin J. Tobin as executive director of the Port Authority and Leander I. Shelley as general counsel. Mr. Tobin, who first entered Port Authority service in 1927 has been executive director since 1942. Mr. Shelley joined the staff in 1926 and has been general counsel since 1942.

Chairman Cullman served as vice chairman of the Port Authority for more than ten years before becoming chairman. He was first appointed as a commissioner twenty-two years ago by the late Governor Alfred E. Smith. Vice Chairman Byrne has been a Commissioner of the Port Authority for almost fifteen years.

The Port Authority Commission comprises six members from New York and six from New Jersey. The commissioners, who serve without pay, are appointed by the Governors of the two states for terms of six years.

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Capt. Shaver Heads Portland's Commission of Public Docks

Captain Homer T. Shaver has been elected 1949 chairman of the Portland Commission of Public Docks. The city's public owned marine terminals are managed and controlled by this body. Pending construction of new administration building to replace the office building destroyed by gas explosion in November, offices of the dock commission are established at Terminal No. 4, in the St. Johns District, at the foot of N. Burgard Avenue.

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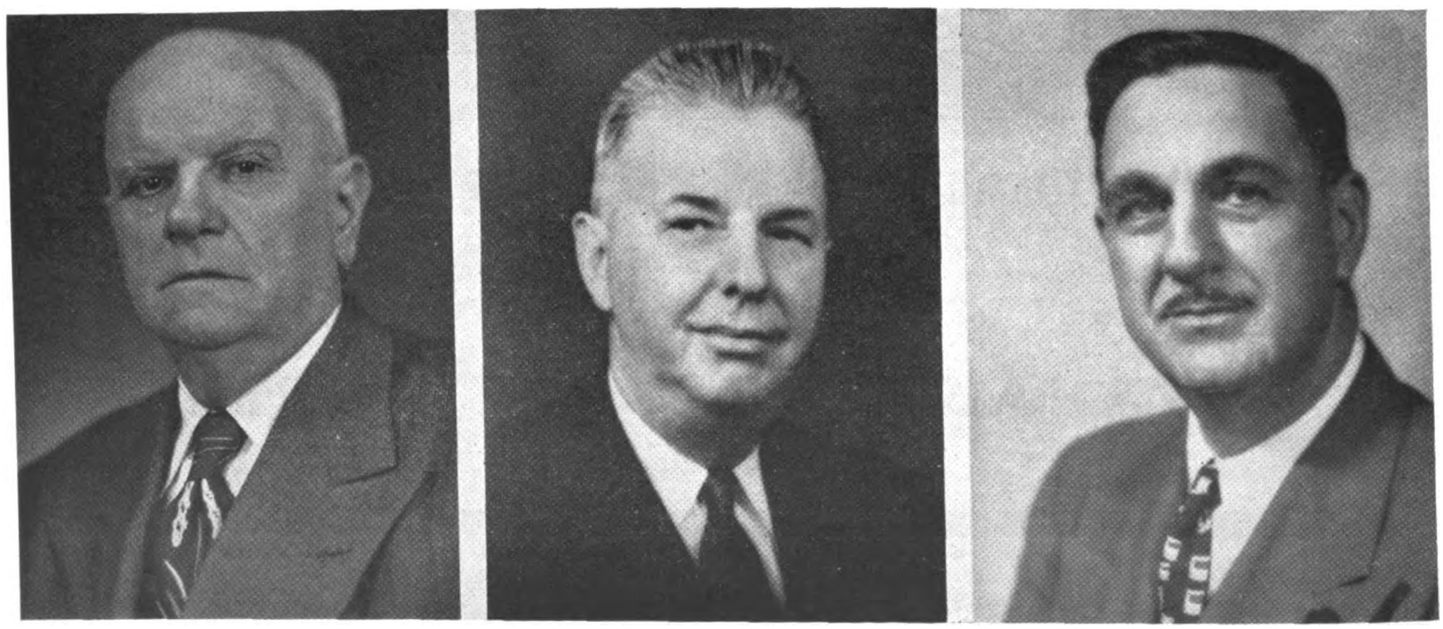
San Francisco World Trade Center Re-elects Officers

Re-election of the board of trustees of the World Trade Center, Inc., San Francisco, to serve during 1949, was announced by O. C. Hansen, president of the corporation.

Officers re-elected in addition to Hansen were: Ernest Ingold, vice president; Leland M. Kaiser, treasurer; and M. A. Cremer, secretary.

Members of the board of trustees are: A. H. Jacobs, Honorable Edward H. Tickle, Ira S. Lillick, Ray B. Wiser, Harry S. Scott, Frank K. Runyan, William G. Mer-

PORT OF NEW ORLEANS APPOINTS NEW COMMISSIONERS . . . Left to right: E. H. LOCKENBERG, General Manager; J. A. McNIVEN, Chief Engineer; LEWIS I. BOURGEOIS, Director of Commerce.



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chant, B. F. Modglin, Harvey Hancock, M. J. McCarthy, A. McKee Donnan, Arthur S. Caldwell and George D. Smith.

The World Trade Center, Incorporated, was established in 1944 by the San Francisco Chamber of Commerce to study feasability and desirability of constructing a world trade center in San Francisco.

Leland W. Cutler, president of the World Trade Center Authority, has reported definite progress being made by the authority in establishing the Center.

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Portland Commissioners Named by Oregon Governor

Governor Douglas McKay of Oregon has announced the reappointment of three members and appointment of two new members to the Port of Portland Commission. Reappointed are Robert H. Atkinson, Edwin Dwyer and Captain Clyde Raabe. New appointees are Chester E. McCarty and Olin Harrison. They succeed James H. Cassell and F. N. Youngman. McCarty, an attorney, served as a colonel in the Air Corps, and has been active in the development of the aviation industry. Harrison is a teamsters union secretary.

Other members of the board are W. L. Williams, American Mail Line; Henry L. Corbett, financier; Miles Standish, printing firm head; Edwin F. Doyle, lumberman. Doyle has been elected president of the commission, succeeding Corbett who refused to consider reelection after 13½ years in that position.

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Port of Houston Sets All-Time High Record

Deep-sea commerce handled by the Port of Houston during 1948 amounted to 40,679,029 tons to establish a new all-time high, according to a preliminary report released by the Houston Navigation District. This amounts to an increase of 19.14 per cent over the 34,143,777 tons for 1947. Value of the 1948 tonnage was $1,129,701,400, also a new record.

General W. F. Heavey, Director of the Port, attributed the increase in part to large shipments of grain under the Marshall Plan and to a heavy movement of fertilizer to all parts of the world. Shipments of petroleum and petroleum products also were larger.

Ship arrivals in Houston during 1948 also showed a substantial gain. A total of 2,657 vessels came into the port last year as compared to 2,327 for 1947.

Enthusiastic over the increase recorded in 1948, port officials say that efforts to obtain more cargo, both export and import, will be redoubled this year.

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Mobile Imports Report Shows Increased Volume

The volume and variety of imports through Mobile continued their upward climb through November, the United States Department of Commerce has reported. Total value of goods brought in through the Port of Mobile was $2,781,287, more than double the figure for November, 1947, and some $78,000 ahead of October, 1948.

Oregon Ports Back Bill to Exempt Leases From New Tax

In the search for new tax money the 1947 legislature of the state of Oregon passed an act, to become effective this year, taxing leases. Claiming that competitive ports in Washington and California are exempt from such taxation and the new tax will cause tenants such as grain shippers and other lessors of waterfront properties to transfer their operations to out of state ports, the Commission of Public Docks, Portland, the Port of Astoria, and the Port of The Dalles are backing a bill in the 1949 Oregon state legislative session which would exempt from taxation port property leased to private operators in cases where the lease or rental is for the purpose of carrying out the objectives for which the port is organized.

Should the exemption act not pass an alternative is that commissions would be forced to take over most of the operations.

Dredging Started For Reserve Fleet Mooring Basin

The Corps of Engineers have notified contractors to proceed with dredging the Maritime Commission's $2½ million permanent reserve fleet mooring basin at Astoria, Oregon. An estimated 12 million yards of dredging is involved. Because of the Northwest power shortage, L. S. Baier, Portland consulting marine engineer, has designed a power scow, equipped with electrical generating units to supply energy for an electric powered dredge to be used on the project.

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More grain is exported each year through the three Gulf ports of New Orleans, Galveston and Houston than through all other ports in the United States, according to C. J. Winters, superintendent of the New Orleans grain elevator.

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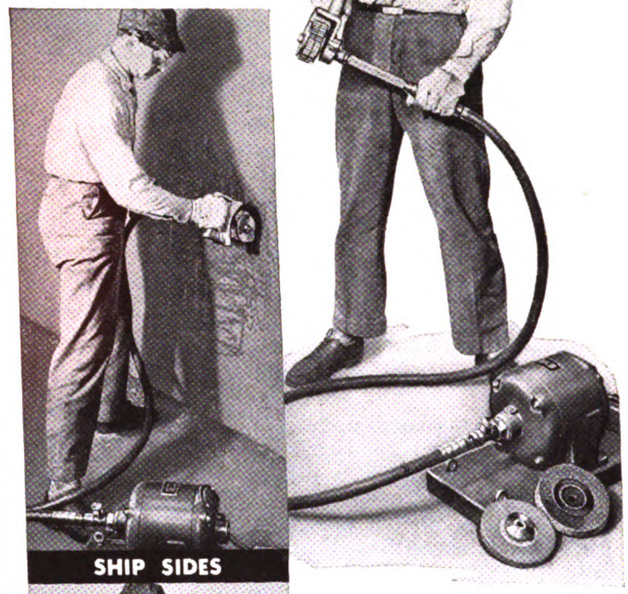
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Ship Repairing

(Continued from Page 35)

tanks, location of cargo on board, dunnage, etc. When the vessel goes on dry dock, the cooperation of the owner or operator is designed in adhering to the plant and dry dock regulations, such as toilets, overboard discharge, jacking engines, etc. Carelessness in not carrying out the regulations may cause considerable irritation and damage.

Another phase of ship repairing where there must be cooperation between all interested parties is in the proper mooring of the ship; proper and safe gangways and ladders; proper safety guards in way of open hatches and all openings; proper lighting, etc. Safety measures at all times must be observed. I might say that for a very hazardous industry, ship repairers have made great strides in preventing accidents.

Now, in semi-conclusion, ship repairing is highly scientific. The ship repairer often has to correct the errors and/or omission of the shipbuilder and these corrections or alterations are sometimes more complicated to the finished job than they would have been if made or carried out during the process of construction. The ship repairer often has many complex, scientific problems of converting a ship, built for a special service, to a ship for some entirely different service; or cut a ship in two, pull or float apart and install additional length; or cut out a section of the ship and shorten the ship; or to change the design of the bow or stern; or to change the design of the rudder and many other changes. Then there are many engineering problems to be solved as well as piping and cargo gear handling. All of these investigations and changes are on a scientific basis and many times carried out by the ship repairer's technical staff separately or in cooperation with the owners, naval architect or consulting engineer.

In conclusion, I still say that ship repairing is a tough business, but it is fascinating, due to the unexpected always jumping up, like a jack-in-the-box, and he has to be pushed down and the problem solved, quickly, efficiently, and within reasonable costs, so that there will always be a ship owner or operator; and if so, there will *always be a ship repairer.*

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Lloyd's Report Shows Decline In World Shipbuilding

A drop in the peak of postwar construction of merchant shipbuilding throughout the world has now been reached, according to a statement issued by Lloyd's Register of Shipping, which covers the returns for the quarter ending December 31, last. Included in this report are all merchant vessels of 100 gross tons each and upwards building in the leading maritime countries, excluding a small tonnage of nonpropelled vessels and sailing vessels. As yet, no authentic returns are available for Russia, Japan or Germany.

For the quarter ending December 31 last, a decline of 63,000 gross tons in the world's output is shown by Lloyd's figures. In the same quarter, a decrease of 94,000 tons was shown for Great Britain and Ireland. On the other hand, a gain of 117,000 tons was made by the United States, while for all the other maritime countries, taken as a group, there was a decline of 86,000 gross tons. In the American shipyards, which were constructing 289,000 tons in the September quarter, 406,000 tons are now under way.

In the following gross tonnage table, Lloyd's Register gives an exact comparison of the shipping under construction during the quarters ending December 31st and June 30th last.

	Dec. 31, 1948	Sept. 30,1948
Great Britain and Ireland	2,114,730	2,308,999
United States	406,848	289,612
Other Countries	1,619,238	1,705,262
WORLD TOTAL	4,140,816	4,203,873

Great Britain and Ireland are now building 51.1% of the world's shipping production, as compared with 52.5% in the September quarter. The percentage for the United States has risen from 6.9 in the September quarter to 9.8%. The share of the other countries, taken as a group, is 39.1% as against 40.6% at the end of December.

Under the supervision of Lloyd's Register, and intended for classification with that Society, there is now being produced an aggregate of 2,565,162 gross tons. Included in this, are 1,753,452 gross tons being built in Great Britain and Ireland, and 811,710 in the other maritime countries. Therefore, 82.9% of the shipbuilding in Great Britain and Ireland and 61.9% for all countries combined, are being built to Lloyd's class.

New work begun throughout the world during the quarter ending December 31 last, was about 38,000 tons greater than the volume of launchings during the same period. In Great Britain and Ireland, however, the volume of launchings was 63,000 tons greater than the new work begun; while for the other countries, taken as a group, new work exceeded launchings by 102,000 tons.

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EQUIPMENTALK

Gulf Engineering to Sell Steelcote Marine Lines

The Gulf Engineering Co., Inc., has been appointed marine representative of the Steelcote Manufacturing Co., St. Louis, for the territory from Savannah, Georgia, to Corpus Christi, Texas, according to an announcement by David J. Spieldoch, marine sales manager for Steelcote.

The Steelcote line of deck coatings and Damp-Tex finishes applied to either wet or dry surfaces, will be stocked by Gulf Engineering's offices in New Orleans, Savannah and Houston.

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Clark "Dynatork Drive" Demonstrated at Exposition

Conspicuous for its revolutionary character among many challenging exhibits at the recent National Materials Handling exposition was the new Clark "Dynatork Drive" shown by the Industrial Truck Division of the Clark Equipment Co., Battle Creek, Michigan.

Installed on a Clark gas-powered Utiltruc fork-lift of 6,000-lbs. capacity, the "Dynatork Drive" gave a demonstration of smooth, quiet, efficient transmission of power, which the company says, promises wholly new standards of usefulness and low cost performance. Power from the truck's engine is transmitted by means of magnetic induction.

W. R. WIESCHENDORFF, new District Manager of Dearborn Chemical Company's western offices. With headquarters in Los Angeles at 807 Mateo Street he will also supervise the operation of the San Francisco and Seattle branches.
Dearborn Chemical Co., manufacturers of water treatment chemicals and NO-OX-ID rust preventives, has its main offices at 310 S. Michigan Avenue, Chicago.



International Paint Develops Air Driven Cleaning Brush

International Paint Company, Inc. of New York has developed a new wire brush driven by compressed air for cleaning ships' bottoms and boottop belts and other surfaces preparatory to painting. The brush itself is roller shaped, 12 inches in width, 6 inches diameter, and houses a tiny 4/10th horsepower air motor. Almost the entire unit is made of aluminum and is very light. It is operated from the drydock bottom with tubular aluminum handles of varying lengths through which the compressed air is passed.

According to the company, the construction of the brush itself involves an entirely new and ingenious principle. In earlier tests with a similar ship cleaning brush, flat spring steel wires were vulcanized in a rubber base. However, the terrific flexing of the wires when passed over rivet heads, laps of plates, pitted plating, etc., caused crystallization and breakage of the wires, even though the finest spring steel alloys were used.

The new principle used, and for which a patent has been applied, involves attaching short flat spring steel wires to the ends of rubber straps. Therefore, as the brush revolves at about 2,000 R.P.M., the flat steel ends do the cleaning while the rubber straps provide for the flexing. The wires, of course, are held against the surface to be cleaned by centrifugal force, while the rubber straps allow complete flexibility. It is reported that in operation, while it does not remove good adhering paint, it cleans all loosely attached paint and rust down to bare metal. The flexibility of the rubber straps, together with their stretching properties removes rust from rivet heads, welded seams and deeply pitted pockets, exposing the bare metal ready for priming and painting.

The company states the brush also removes every vestige of fouling, both grass and shells. Further, the flat wires remove any dampness from the surface of the paint, thus eliminating the need for hosing down when time does not permit of same.

Arthur Ward, inventor of this brush and president of International Paint Company, Inc., claims the continued use of these machines on ships will add greatly to the preservation of hulls and to the maintenance of smooth paint films, resulting in lesser skin friction. The great flexibility and searching properties of these brushes would seem to make possible their use in many other fields.

Harry Parsons Joins Gamlen Chemical Co.

Harry W. Parsons, well-known in national marine trade circles, has joined the Gamlen Chemical Co., San Francisco, New York and Pittsburgh, as supervisor of sales for the Great Lakes and western rivers territory. Mr. Parsons, recently with J. S. Carswell Company in San Francisco, formerly was with the Foster Wheeler Corporation in New York.

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O. B. Whitaker Celebrates 35th Year with Sperry Gyroscope

O. B. Whitaker, manager of marine sales for Sperry Gyroscope, recently observed his thirty-fifth anniversary with that company. Prominent in marine circles, Mr. Whitaker joined Sperry in 1913 following service in the U. S. Navy. He was active in gyro-compass work here and abroad prior and during World War I, and established the widely-known Gyro-Compass School in Brooklyn.

He contributed to aircraft instrument development, was chief inspector and managed field service and advertising and publicity before becoming manager of marine sales in 1929. During the recent war he served as manager of federal and marine sales.

Mr. Whitaker was recently elected treasurer of the Society of Naval Architects and Marine Engineers. He is a past president of the Propeller Club of the United States, Port of New York, and member of the American Society of Naval Engineers and Board of Visitors of the New York State Maritime Academy.

O. B. WHITAKER, Manager of Marine Sales for Sperry Gyroscope, who recently observed his 35th anniversary with that company.



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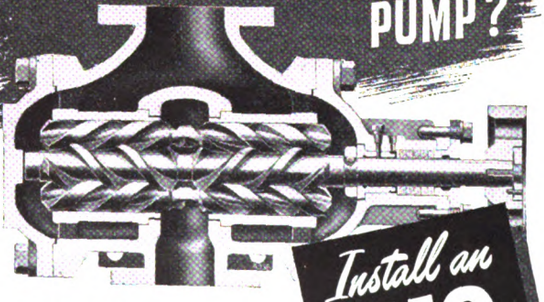
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New Type Watertight Door System on Army Transports

The new Piezo system for operating and control of watertight sliding doors by electric power or manual gear has recently been installed on two U. S. Army Transport Service vessels, the FREDERICK R. FUNSTON and the JAMES O'HARA. The installation of six door units on each ship was made during conversion work on the ships at the San Francisco yard of the Bethlehem Steel Company, Shipbuilding Division, which also constructed the doors.

This new door operating system, approved by the U. S. Coast Guard, was designed and manufactured by the Piezo Manufacturing Corp. of New York. The installations on the FUNSTON and O'HARA were sold by M. J. Gigy and Associates, San Francisco, exclusive Pacific Coast distributors for Piezo.

The Piezo system features a powerful door operator employing a transmission gear box based on the worm gear differential principle. This transmission design enables the motor to open or close the door without shifting of gears, declutching or disconnection of the manual controls. A positive manual connection to remote handwheels is maintained at all times.

The watertight door is locked in the closed or any intermediate position by the worm gears, thus preventing movements with the roll of the ship. A large size motor provides an excess of power for positive, watertight closing of the doors. A torque overload switch limits turning power, insuring against damage to doors and mechanical units should the door be temporarily blocked. The handwheels turn easily when closing doors by the manual operating gear.

To provide visual indication of the door "open" and "close" positions at the remote manual operating station, usually located several decks above the door, a door position indicator is incorporated in the system.

The electrical controls for the Piezo system provide central master operation from the bridge for all watertight doors and also provides local control stations at each door. The electrical circuit is simple, minimizing ships wiring and making installation economical.

The ruggedly constructed Piezo system meets all U. S. Coast Guard regulations for safety.

The Piezo catalog No. 59, describing these new door controls, can be had from the firm's office, 110 East 42nd Street, New York 17, or from the Gigy organization at 112 Market Street, San Francisco 11.

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Republic Supply Co. Moves Headquarters

Republic Supply Co., a $5,300,000 California firm of jobbers and manufacturers of marine and industrial supplies, has moved its headquarters to a new $1,250,000 plant on a 14-acre site in the central manufacturing district of Los Angeles at 2600 South Eastland Ave. Republic has marine outlets in Oakland and Wilmington and, among their lines is Great Western Cordage.



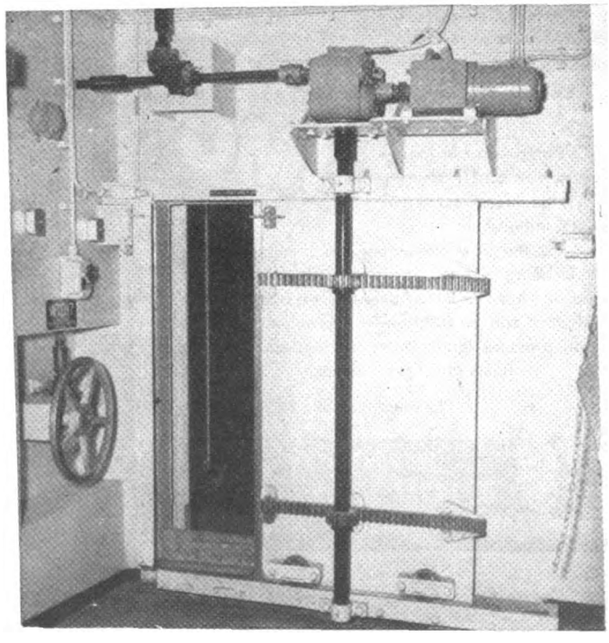
GEORGE H. KENT, newly-appointed Director of Sales for the E. F. Drew & Co., Inc., New York, who assumes the responsibility for the coordination of all sales activities of the operating divisions of the Drew Company.

Alberts Joins Goodrich As New York Representative

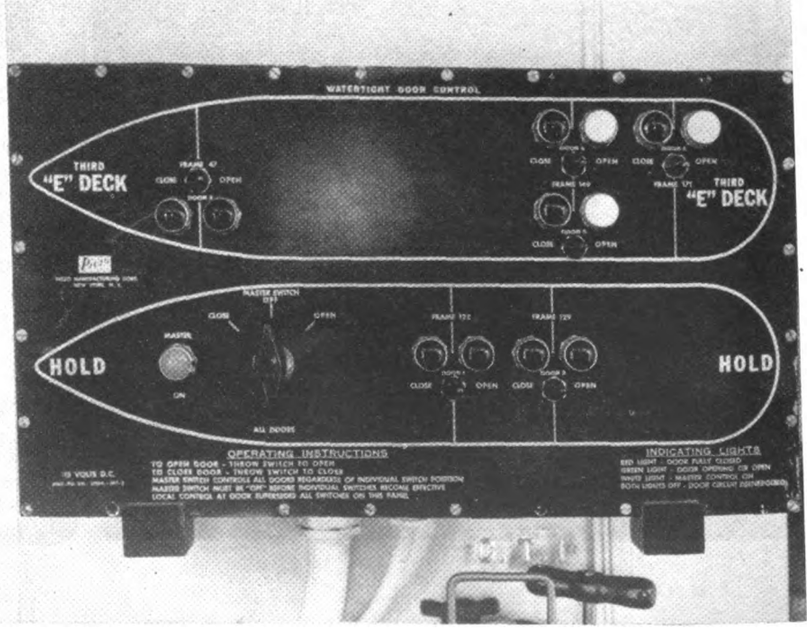
R. D. Alberts, assistant port engineer for American President Lines in New York, resigned early in January to become marine representative in the New York metropolitan area for the B. F. Goodrich Co.

Mr. Alberts will handle all Goodrich rubber products manufactured for use aboard ship. His headquarters will be with Baldwin Belting, Inc., 74-76 Murray Street, New York.

NEW TYPE PIEZO WATERTIGHT DOOR CLOSING SYSTEM installed aboard the USAT ships FUNSTON and O'HARA, by the Bethlehem Steel Co., Shipbuilding Division, San Francisco. The doors were built by Bethlehem. Hand wheels for manual control and switches for electrical operation are located on each side of the door with the mechanism shown at the top.



MASTER ELECTRICAL CONTROL PANEL for the Piezo watertight door closing system as installed on the bridge of the USAT vessels FUNSTON and O'HARA. The control panel provides for the group or individual operations of the six doors on each ship. Lights indicate door position.



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NEW RMCA WEST COAST CHIEF—On the right in the accompanying picture is HARVEY R. BUTT, recently named Regional Sales Manager of Radiomarine Corporation of America for the Pacific states, with headquarters at San Francisco. Mr. Butt formerly was manager of the firm's Washington office. On the left is CHARLES T. McCLELLAN, Assistant Regional Sales Manager. Mr. Butt succeeded Charles A. Lindh, transferred to Radiomarine's Boston office.

De Laval Steam Turbine Announce Personnel Changes

The following executive changes of the De Laval Steam Turbine Company, Trenton, New Jersey, were announced:

Henry W. Johnson retired as vice president in charge of manufacturing, but is continuing as director and member of the executive committee.

C. Richard Waller has been named vice president and director for engineering; H. G. Bauer has been elected vice president and executive engineer; J. P. Stewart, manager, commercial sales division, has been elected a vice president.

W. A. Reynolds assumes responsibility for the development and merchandising of new small products in addition to his position as manager of the present IMO Pump and Worm Gear Divisions; W. A. Neumann, Jr. has been appointed controller.

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News About Town From the Pacific Northwest

Allen Ingraham has been named manager of the steamship supply department of Pacific Marine Supply Company, Seattle. He succeeds George E. Hall, retired due to ill health, after more than 30 years with the company. Ingraham has been Hall's assistant for the past four years. Howard Carroll has been named assistant to Ingraham.

Dearborn Chemical Company, Colin J. Fryer, Northwest district manager, have moved Seattle headquarters to 1004 S.W. 166th Street, Seattle.

Curtis Johnson, general superintendent, Marine Electric Company plant, Portland, Oregon, has returned from Cleveland where he attended classes on new developments in welding at the Lincoln Electric Company plant. Marine Electric Company are authorized Lincoln welder repairs and service representatives at Portland.

C. M. Sigel, formerly with Winslow Marine Railway and Shipbuilding Company and with Willamette Iron and Steel Company, is now with A. O. Smith Corporation with headquarters at Milwaukee, Wisconsin.

James Alex, Standard Marine Supply Company, Incorporated, Portland, Oregon, has announced his appointment as distributor for E. F. Drew and Company in the Portland area.

Roy Knowles, with McGinitie and McDonald, marine surveyors at Seattle for the past several years, is now with Carmac Shipyards, Seattle.

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Korody Marine Corp. Appoints S. H. Niewenhous

The Korody Marine Corporation of New York and California, specialists in the construction and conversion of ships for inland waterway and coastal use, have announced the appointment of Siebrand H. Niewenhous, Jr, as director of sales. Mr. Niewenhous will make his new headquarters at the Korody Marine Corporation offices at 15 Park Row, New York.

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M. J. Gigy & Associates, San Francisco marine sales and service representatives, announce their appointment as Pacific Coast agents for Washington Aluminum Company, Washington, D.C., manufacturers of aluminum accommodation ladders, gangways and shipboard ladders.

Asbestos Supply Company of Seattle in New Quarters

In a move which has consolidated previously scattered warehouse, shop and office quarters under one roof Asbestos Supply Company of Seattle is established in new quarters at 5035 First Avenue South, Seattle.

The building is a one story warehouse type structure with 48,000 square feet of floor space divided into spacious general office quarters, a complete shop and a vast area of warehouse space. A completely palletized movement characterizes the warehouse operation. For this operation, high ceilings, truck-high loading platforms along two sides of the building and a rail spur of five car capacity, are used effectively.

Company activities are primarily insulation service and sales to heat, cold and air conditioning customers. Materials handled include Zonolite, asbestos lumber products, Armstrong cork, Jamison cold storage doors, Babcock and Wilcox line of insulated fire brick, Pabco precision molded coverings, and Acousti-Celotex.

Recently announced by President J. W. Clise was the appointment of Al J. Stream, formerly vice president of Plant Rubber and Asbestos Works, as assistant to president and treasurer of Asbestos Supply Companies, in which are included the Asbestos Supply Company of Oregon, the Asbestos Supply Company of Seattle, the Asbestos Supply Company of Tacoma and the Asbestos Supply Company of Spokane.

STAFF OF ASBESTOS SUPPLY COMPANY OF SEATTLE includes from left to right: CLARENCE BALL, Sales; DON THOMPSON, Marine Sales; CLARK B. LAKE, Marine Sales; DON PAGE, Sales Manager, AL J. STREAM, Vice President and Treasurer; H. R. LEIGH, Sales; CLYDE STRICKLAND, Warehouse Foreman.

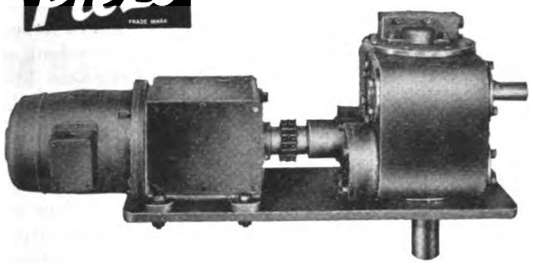


OPEN HOUSE was recently held by Devoe & Raynolds Company, Inc., paint manufacturers, at its new San Francisco marine Pacific Coast headquarters . . . Marine men present were, left to right: BOB BLATT, Purchasing Agent, Sudden & Christenson; JOE IMHOF, FELTON HOWE and M. J. SILVA, Weeks-Howe-Emerson Company; COLEMAN CLARKE, Pacific Coast Marine Manager, Devoe & Raynolds; WALTER TAYLOR, Weeks-Howe-Emerson; DICK JONES, Purchasing Department, American President Lines; RAY WHEELER, Purchasing Agent, Moore-McCormack; AL BUCKNER, Purchasing Agent, States Steamship; C. K. HOWE, Weeks-Howe-Emerson; CAPTAIN JOE DICKOVER, Operating Manager, States Steamship; DICK DINELEY, Weeks-Howe-Emerson.



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Piezo



The new Piezo System for control of Watertight Sliding Doors provides electric power or manual door "opening" and "closing." The system features high powered motor operation to insure watertightness, easy manual operation and low cost of installation.

The Door Operator works on an exclusive worm gear differential principle with positive manual connection at all times—no declutching. Simplified electrical controls minimize ships wiring. Meets all U. S. Coast Guard regulations.

Piezo also manufactures standard remote control equipment such as Universal Gear Joints, Gear Boxes, Block Joints, and associated shafting accessories.

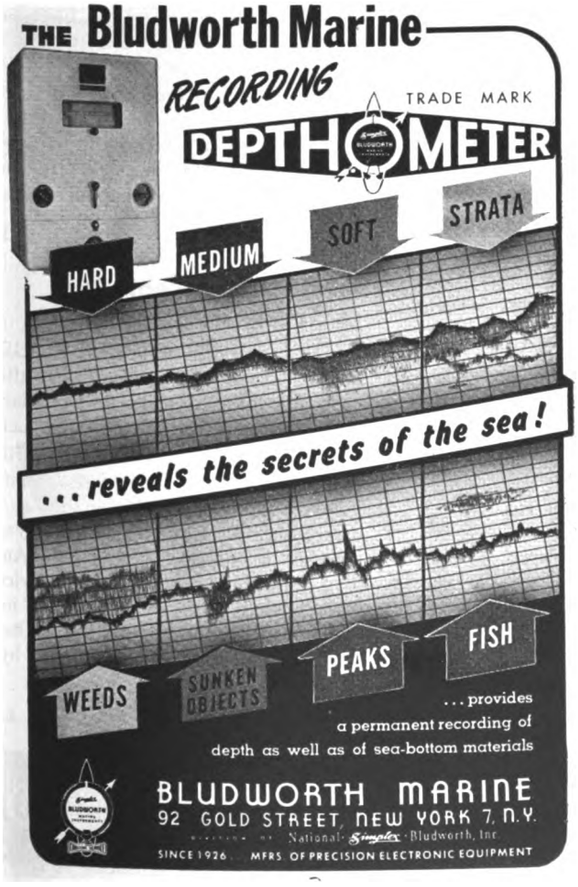
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Technical information on NAVICOTE PLASTIC (S.M.) *is available upon request. Write Hart and Burns, Inc., Riverside, California.*



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MARINE SERVICE, INC., Seattle staff includes: left to right, PETE PASSE; HOWARD SIMMONS; S. K. COPELAND; Q. A. HERWIG, President; JIM HATTEN; JERRY MELLIS; CAPTAIN ERNEST G. HEINRICI. Herwig took office as president of the Seattle Transportation Club on January 1.

Marine Service, Inc., Seattle Moves to Larger Quarters

Marine Service, Inc., Seattle, has again outgrown quarters and in February moved to its new home at 1508 Fourth Avenue South, Seattle, with ground floor space of 10,800 square feet serviced with rail spur.

The new building provides warehouse space for specialized ship maintenance equipment inclusive of sandblasting units, hot dip tanks, large quantity storage and shelving of varied products for ship maintenance, as well as modern offices and sales room.

Starting in 1934 in a half of a storeroom on Main Street steady progress has marked the expansion of the firm. Originally established as a tank and boiler cleaning firm the company's growth has necessitated moves to larger quarters every few years. Today under the management of Q. A. Herwig, president, and Henry A. Anderson, treasurer, the organization continues in ship maintenance work with experienced crews and in addition acts as sales agents for International Paint, American cordage, Bird Archer boiler treatment, Gamlen chemicals, Steelcote coatings, TAC wrenches and other engineering supplies.

Floating Equipment Sales Reported

Puget Sound Bridge and Dredging Company has completed overhaul on the mv FIXITY. Equipped with two 900 hp Cooper Bessemer Diesels, type GS-V8, 720 rpm, the FIXITY is the former minesweeper AM 235. Purchased by the Commercial Barge Line of Detroit, plans are to use the vessel to transport automobiles from head of navigation on the Mississippi to points on the lower Mississippi. Also included in Commercial Barge Line operation plans is use of three converted LSMs.

Magnolia Oil Company has purchased four covered steel barges from Ocean Tow, Inc., Seattle. The barges are being towed by tugs of Ocean Tow, Inc., to Orange, Texas, where they will be converted into barracks and drilling units. Formerly operated in the barge line service of Alaska Freight Express the barges are former Navy YF's, 260 feet long, 48 feet beam, and 15 feet depth.

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C. J. Hendry Co., pioneer California ship chandlers, have been named California distributors for the Du Pont Dulux marine paints, manufactured by E. I. du Pont de Nemours & Co. The Hendry company has stores in San Francisco, San Pedro and San Diego.

New location at 181 Steuart Street, San Francisco, of the Pacific Marine Refrigeration Company, formerly of Oakland. In the picture, left to right, in front of the company's two service trucks, are shown ALEX JOHNSTON, Owner; JIMMY CREAN, Foreman, BOB GALLOWAY and GIL HUGHES, Service Men. TOM OLLERTON, Pipe Fitter, was not present in picture.
This company specializes in marine refrigeration sales, service, parts and export trade and recently was named representative of the Kohlenberger Ice Machine Corporation, Los Angeles, offering overnight parts service to San Francisco customers from the factory. Their phone number is YUkon 2-7054.



Wm. Morse Joins San Francisco Branch of Fairbanks, Morse

A new member of the dealer department sales staff of the San Francisco branch of the Fairbanks, Morse & Co. is William B. Morse, son of Robert H. Morse, Jr., Chicago, vice president of the company and new president of the Diesel Engine Manufacturers Association.

William Morse is the fourth generation of his family in the Fairbanks-Morse Company. He was transferred to the San Francisco branch after spending two years at firm's Beloit factory. Previously he served in the South Pacific with the United States Navy as radio technician.

⚓ ⚓ ⚓

Universal Specialties Co., Inc., Wilmington, Calif., has opened a San Francisco branch at 181 Steuart Street, telephone YUkon 2-7054. Charles I. Jackson, president and marine superintendent of the firm, will be in charge at San Francisco, handling Marlo packings, the Oxi engine room chemicals and their other lines.

⚓ ⚓ ⚓

Klingler Directs Sale of Wickwire Rope in Houston Area

The Wickwire Spencer Steel Division of The Colorado Fuel and Iron Corp., announces E. L. Klingler will direct the sale of Wickwire rope in the mid-continent area—Houston, Abilene, Texas and Tulsa, Oklahoma. He will have his headquarters in Houston, transferring from the Palmer, Massachusetts sales office.

Mr. Klingler has a background of 19 years in the wire rope industry including production, engineering and sales. He previously spent six years in the mid-continent area as a wire rope salesman.

⚓ ⚓ ⚓

First River-Ocean Run Is Successful Voyage

The motorship ANGELE HIGGINS returned to New Orleans recently after successfully launching the first regular river-ocean service from Cuba to St. Louis.

Finishing the 1760-mile test run that makes St. Louis an inland "ocean port," Fred B. Otell, president of the Las Americas Shipping Line, says the voyage has proven a success. The Las Americas firm, operators of the new service, will add other vessels to the run as increasing freight volume warrants, Otell declared. Las Americas is owned by Higgins, Inc.

⚓ ⚓ ⚓

The Sperry Company has also announced the appointment of R. T. Greer as assistant district manager of the southwestern district with offices in Los Angeles, and the appointment of D. P. Kelley as assistant district manager of the midwestern territory with offices in Cleveland.

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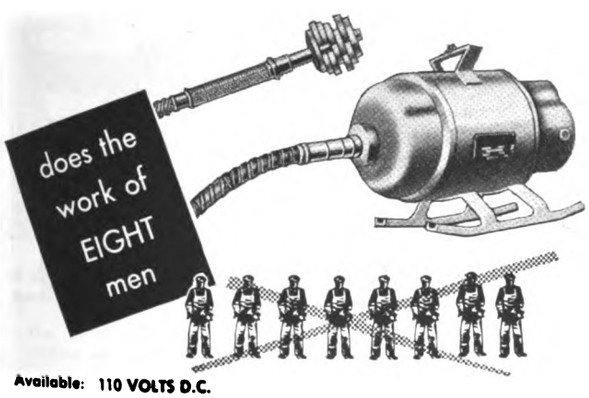
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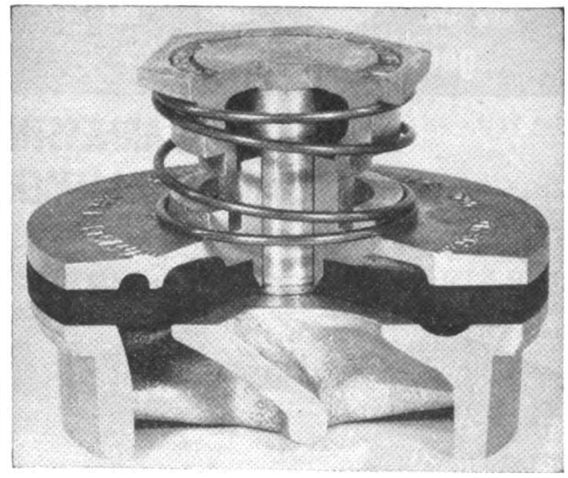


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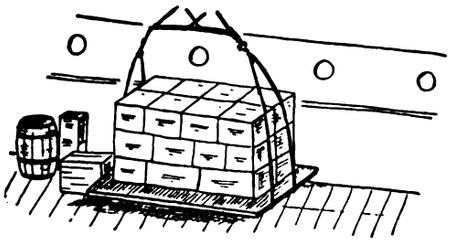
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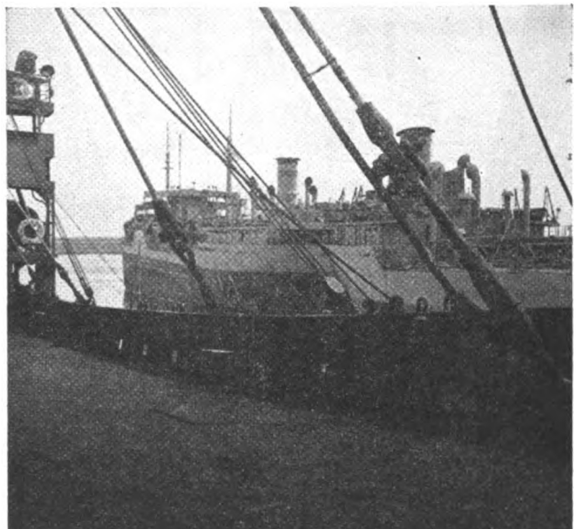
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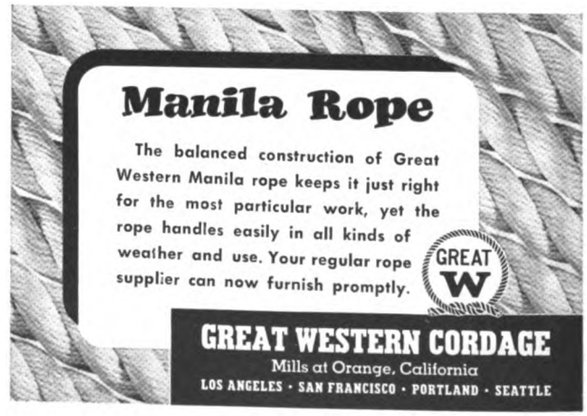
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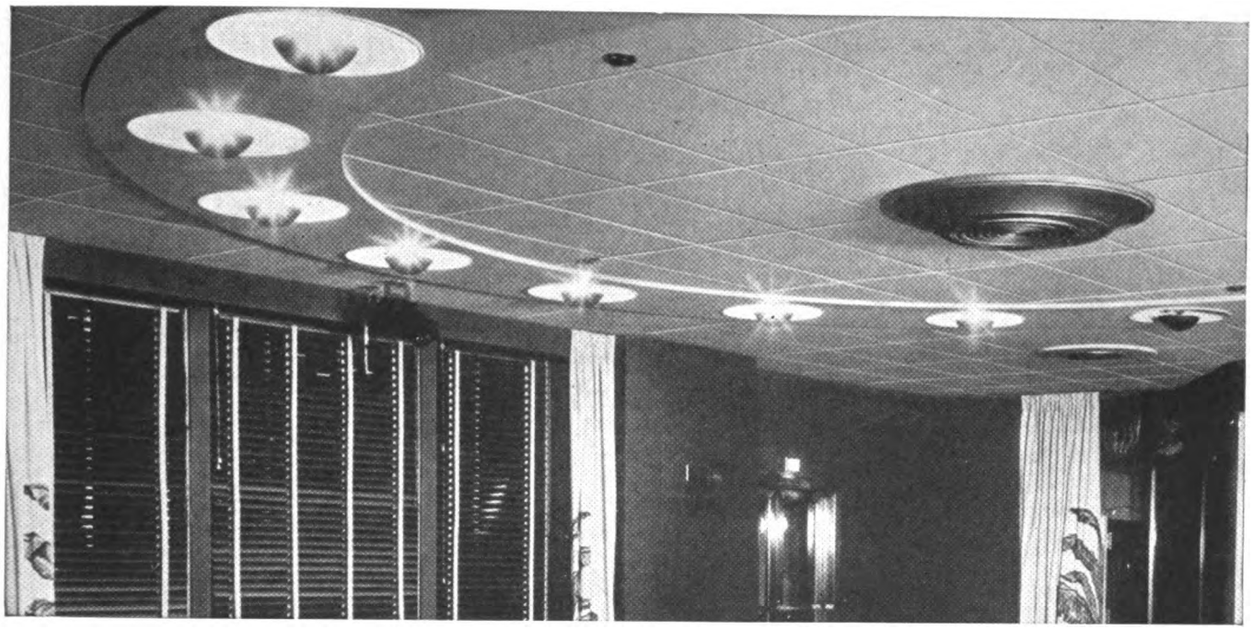
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Perforated Marine Veneer: A rigid, smooth surfaced 3/16" sheet, made of asbestos fibre and cement, furnished ready for painting and perforated to permit passage of sound into the absorbent backing material.

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For additional information about J-M Acoustical and other Marine Materials, write Johns-Manville, Box 290, New York 16, N. Y.

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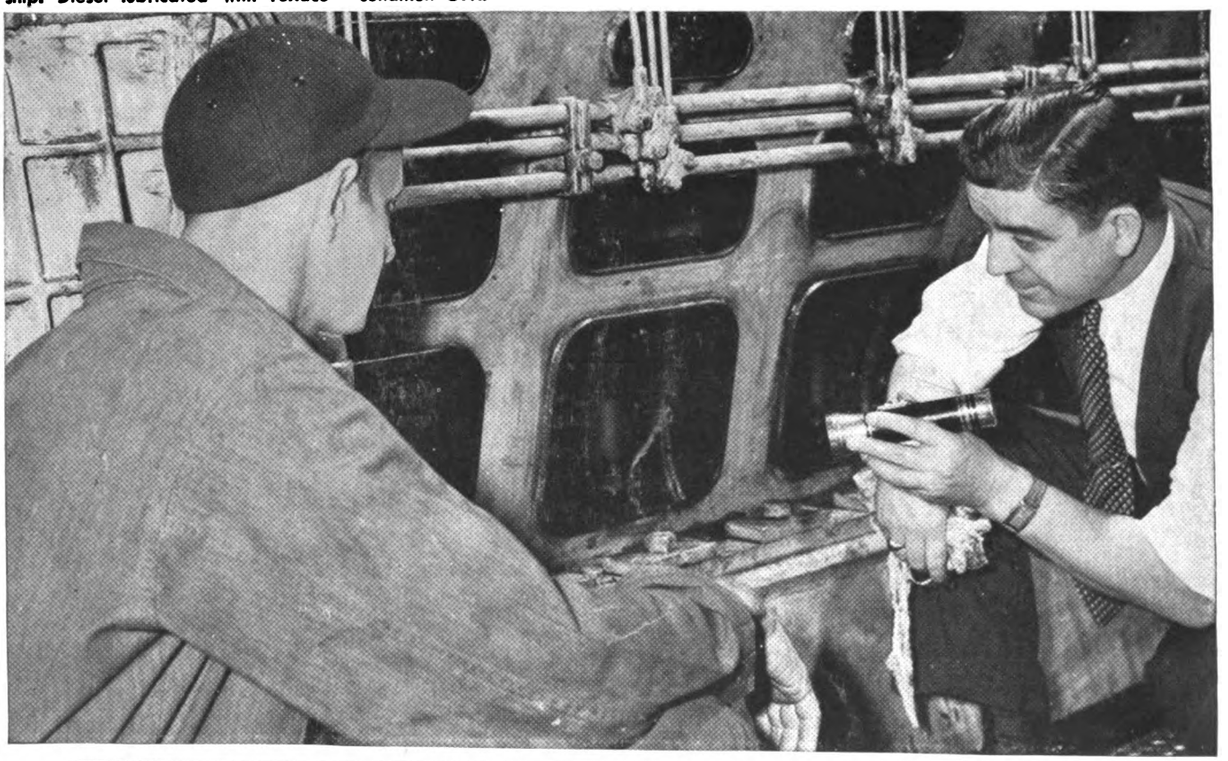
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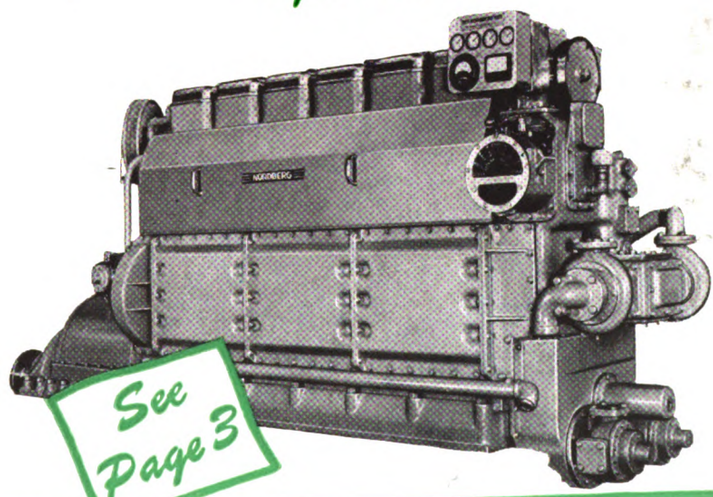
THE LOG OF AMERICA'S MARITIME INDUSTRIES

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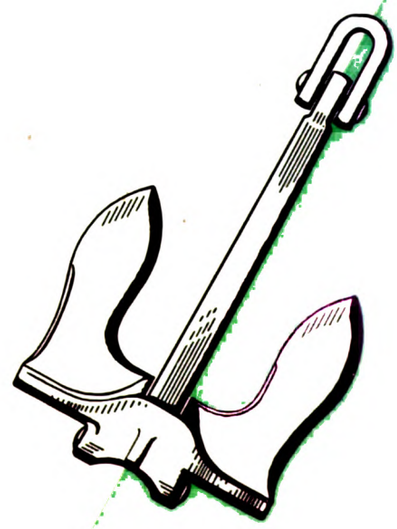
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See Page 3

NORDBERG DIESEL ENGINES



APRIL 1949

Volume 44 • Number 4

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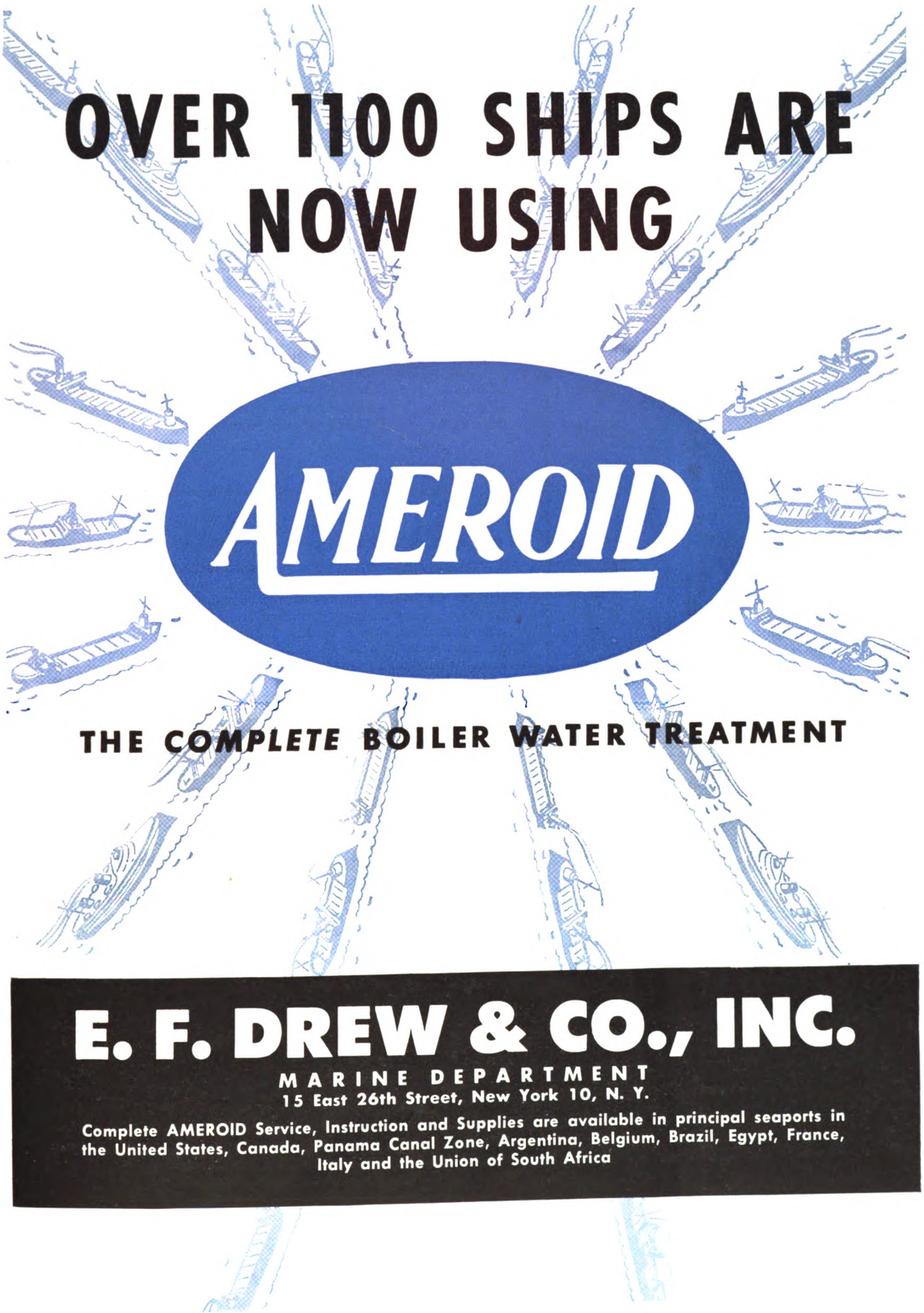
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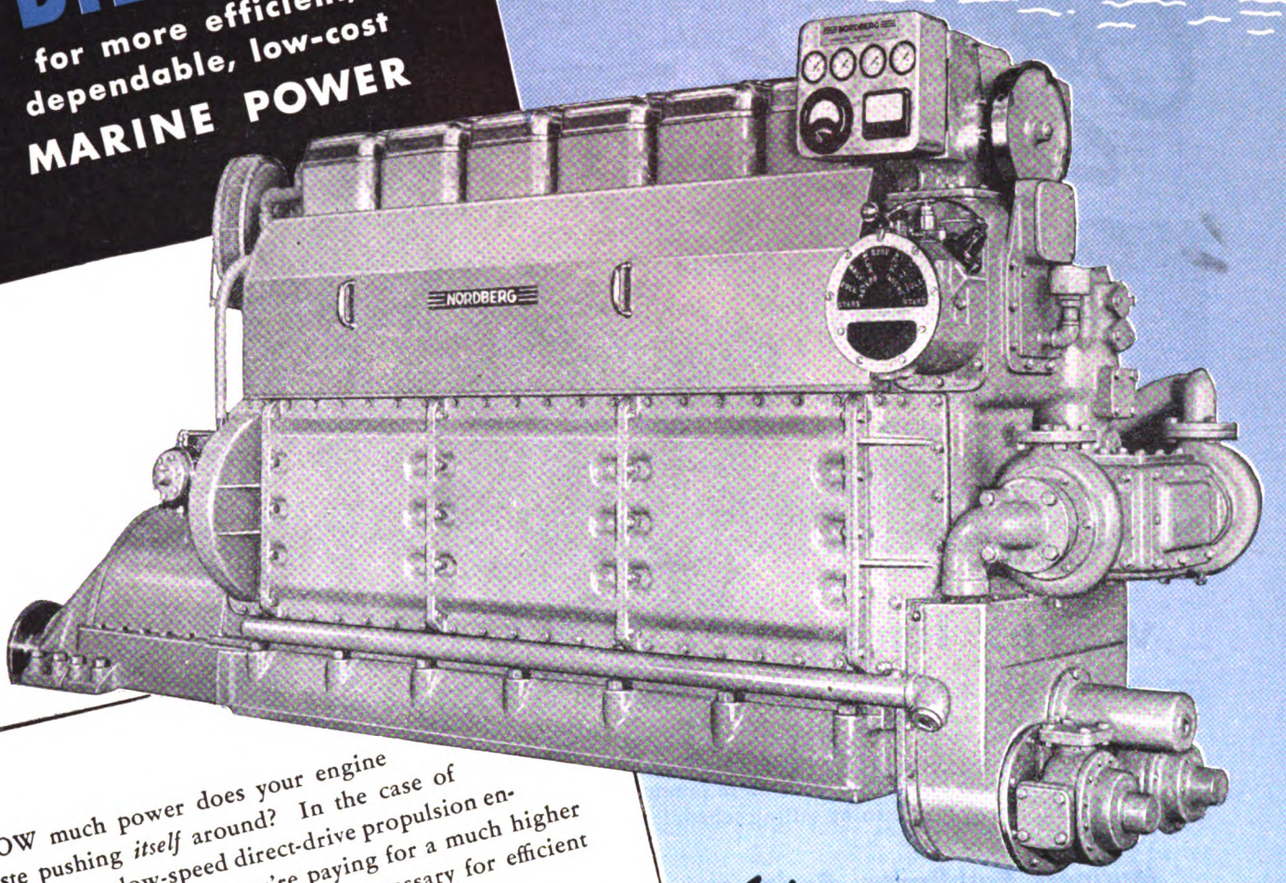


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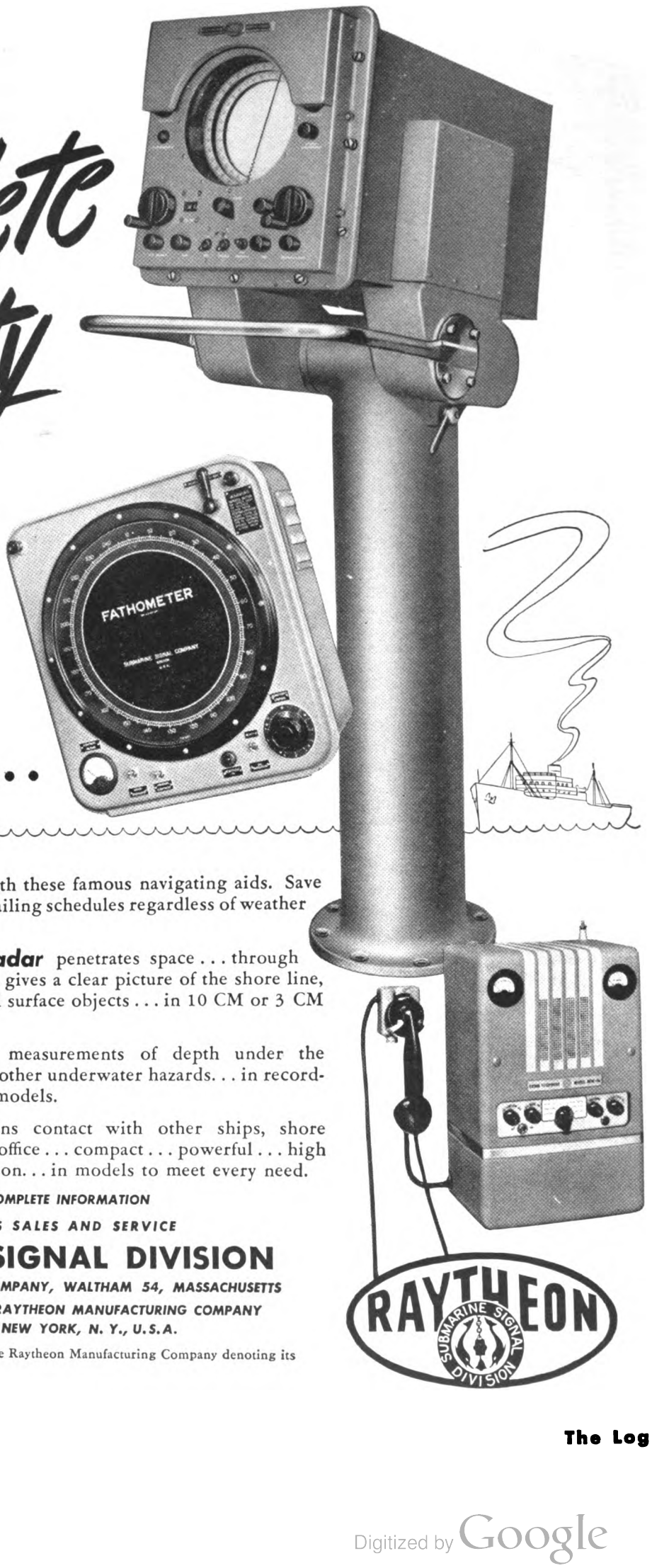
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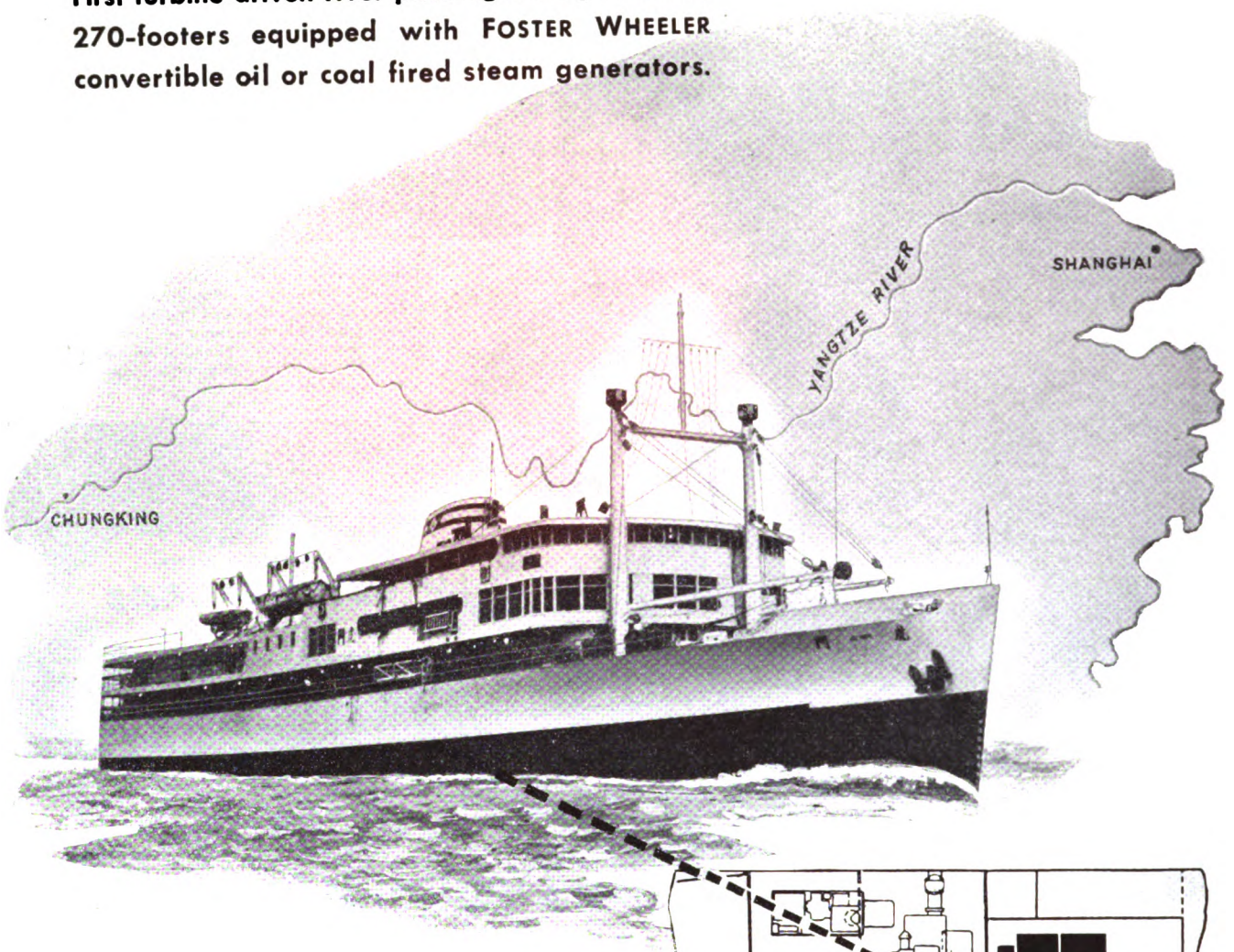
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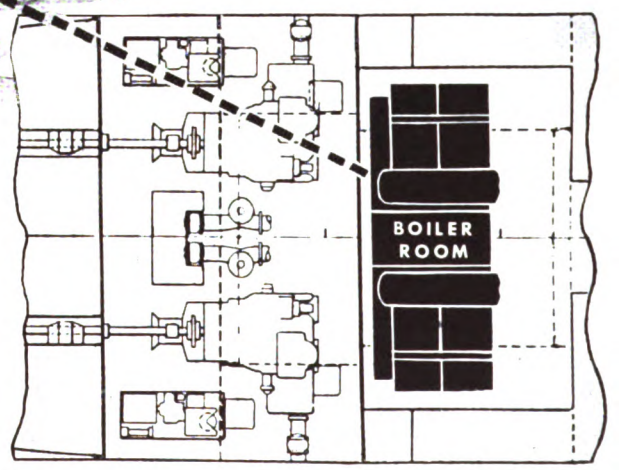
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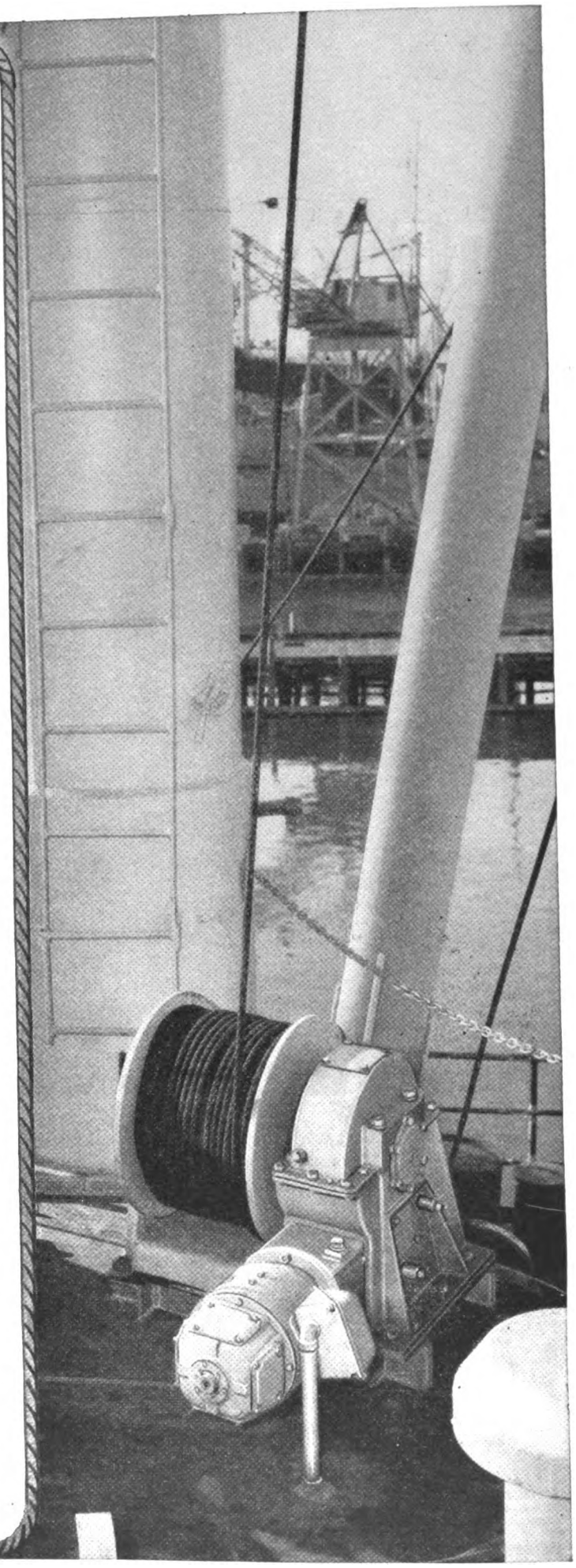
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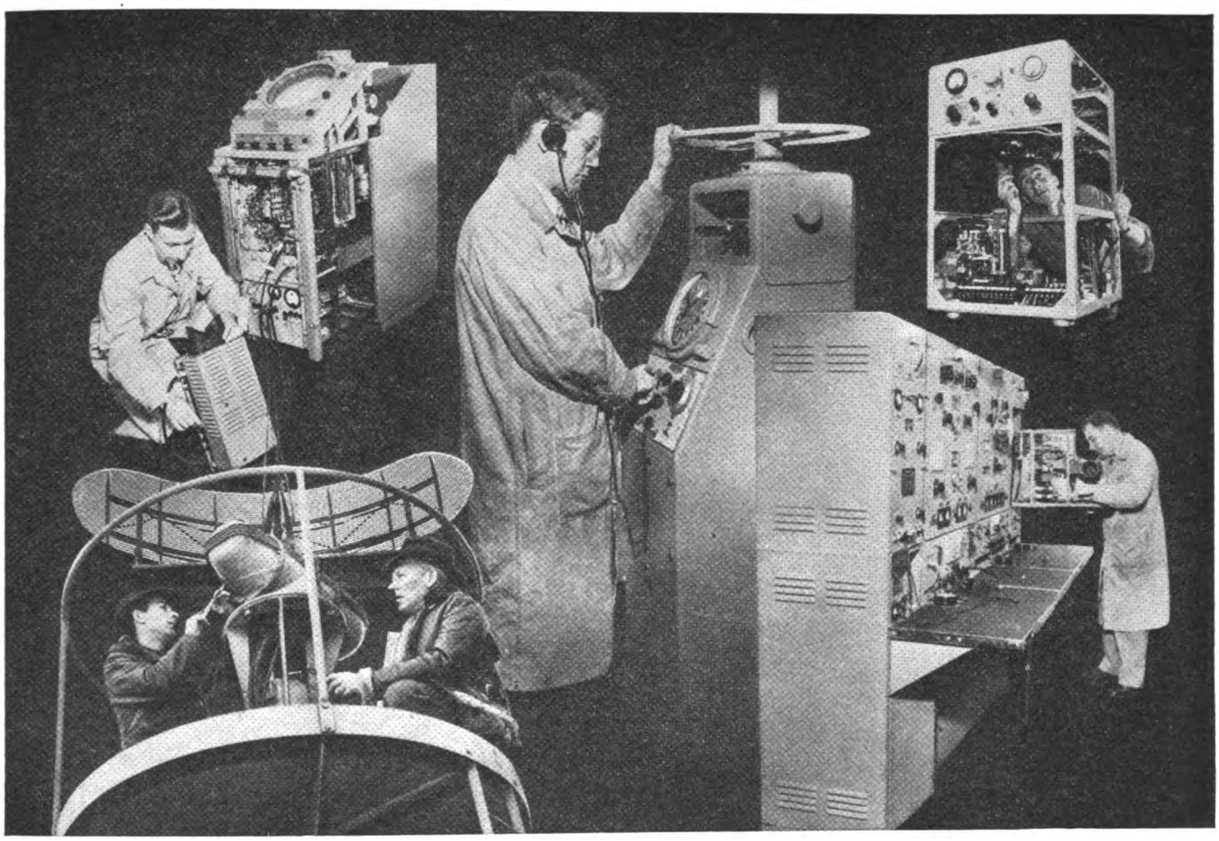
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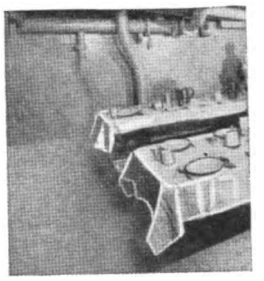
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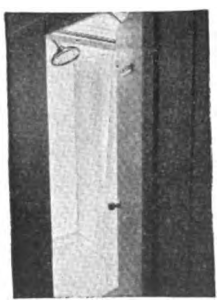
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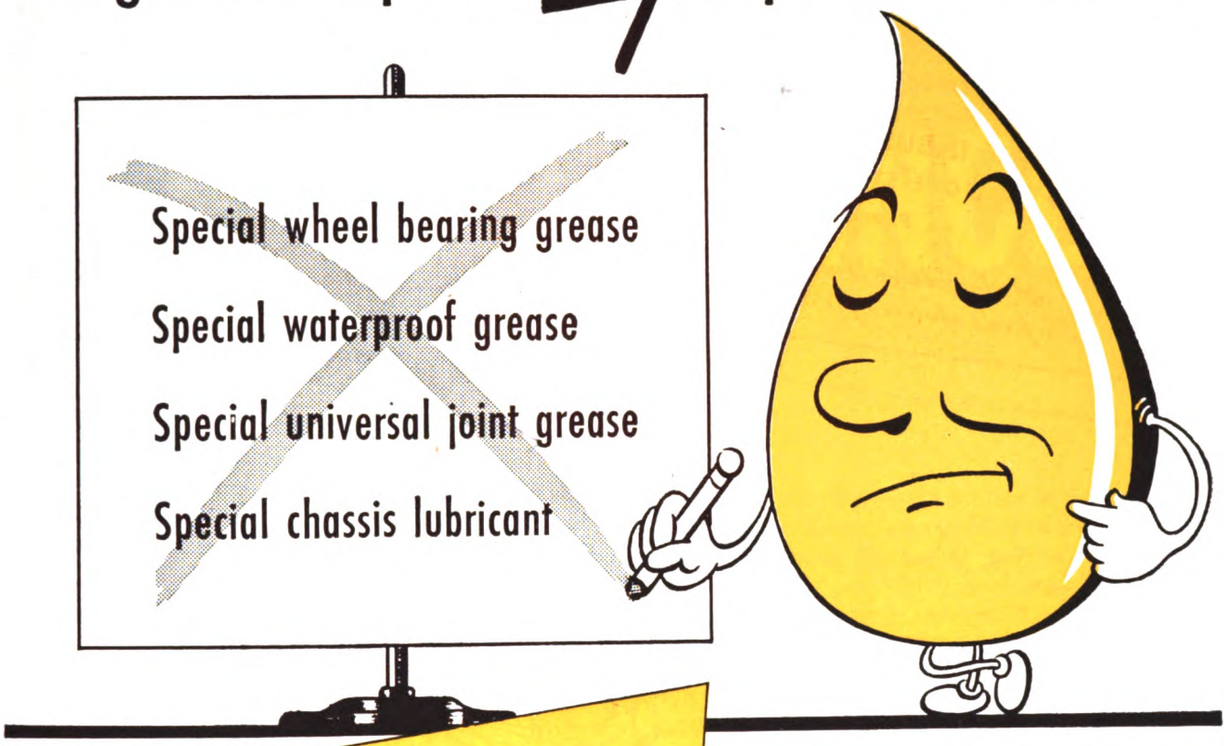
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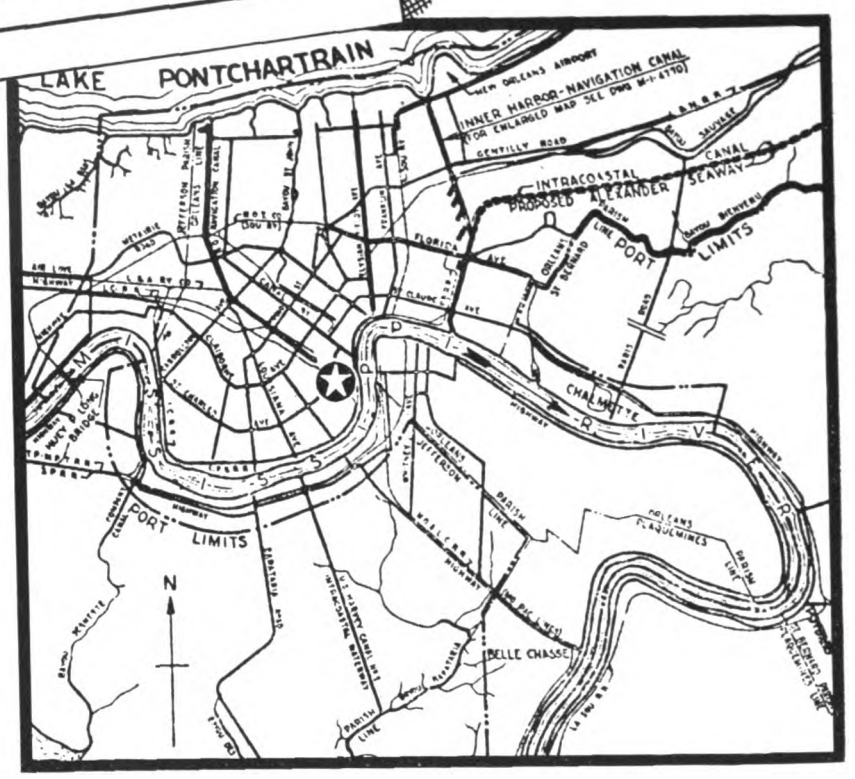
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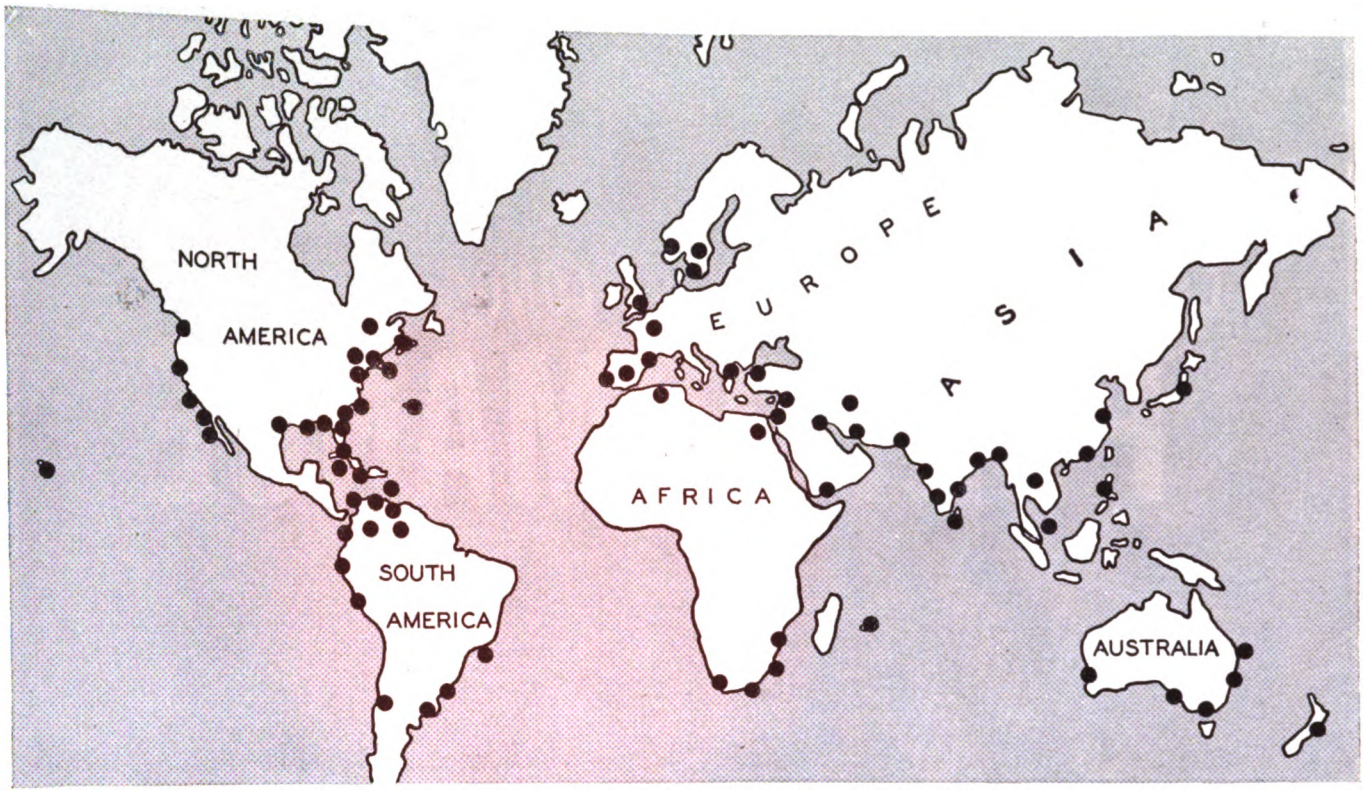
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American Air Conditioning Corporation
257 Broadway

Philadelphia
General Marine Refrigeration Co.
Cor. Delaware Ave. and Poplar St.

Baltimore
Henry Bensel Co., 3105 Mareco Ave.

Norfolk
P. C. Hartman Co., 833 West 21st St.

Charleston
Bailey's, 130 King St.

Savannah
Mingledorff's Inc., 10 Whitaker St.

Jacksonville
Florida Weathermakers, Inc.
1338 Hendricks St., P. O. Box 5217

Miami
Belcher Industries, Inc.
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Krauss Heating and Ventilating Company
346 Ninth St., South

Mobile
Marine Specialty Company
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New Orleans
O. E. Lewis Company, 337 Girod St.

Houston
M.M.M. Inc.
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San Francisco
Carrier Corporation, 625 Market St.

George E. Swett and Company
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Carrier Air Conditioning Ltd.
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Carrier Air Conditioning Ltd.
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William Adams and Company Ltd.
157 Waymouth St., Adelaide

Harris, Scarfe & Sandovers Ltd.
Hay St., Perth

Bahrein Island
A.M. Yateem Brothers
Bahrein, Persian Gulf

Bermuda
Smith's Sales and Service
P.O. Box 104, Hamilton

Brazil
Carrier Engenharia, S.A.
Av. Nilo Pecanha 155-3° andar
Rio de Janeiro

Carrier Engenharia, S.A.
Praca da Republica 64-7° andar, São Paulo

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P.O. Box 166, Colombo

Chile
Soclima—S. Carrasco, S.A.C.
Nuble 72, Santiago

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Interamericana, S.A.
Postal 728, Barranquilla

Cuba
Refrigeracion Y Aire Acondicionado, S.A.
Lamparilla 9, Havana

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Sociedad General
Calle Fco. de P. Ycaza 110, Guayaquil

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Apartado No. 453, Panama

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Pedro Martinto, S.A.
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The Edward J Nell Co.
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Portugal
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Juan Carlos Gomez 1550, Montevideo

Venezuela
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C.A. Zuliana De Materiales
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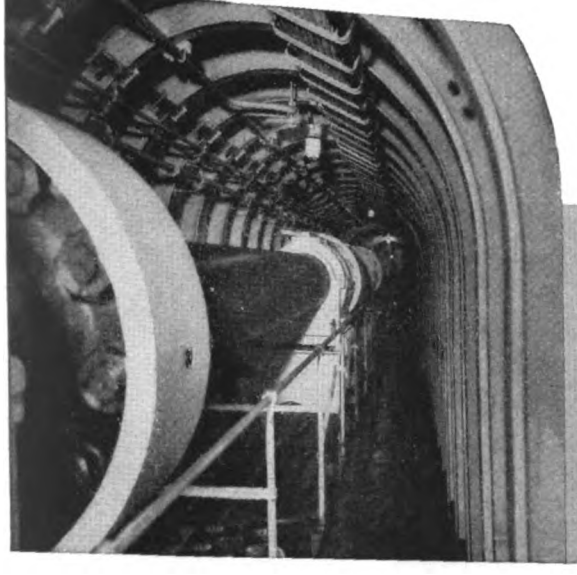
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SHAFT ALLEY Chatter

Todd's San Francisco Appoints Spaulding Planning Supt.

Philip F. Spaulding has been appointed planning superintendent for the San Francisco division of Todd Shipyards Corporation. He joined Todd's bay area plant on a transfer from the company's Seattle division, where he was in charge of planning and engineering. Prior to that, he served the firm as principal engineer estimator at headquarters at One Broadway, New York. He has been with Todd's since 1940.

Mr. Spaulding has been associated with shipbuilding, repair and conversion work since 1931, when he worked on the wooden vessel "North Star," one of the ships which Admiral Richard Byrd used on a trip to the Antartic.

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Lykes' Vessel is Hero to South American Town

The Lykes Lines vessel ss WATER KNOT is credited with saving the port town of Guanta, Venezuela, from destruction by fire recently, according to Captain H. S. Gisch, Master of the vessel.

Captain Gisch reported that a short circuit in the electric light and power plant of Guanta set off a tremendous blaze which not only destroyed the power plant but threatened to wipe out the entire village. Without any fire trucks and no running water, the Guanta villagers were helpless to fight the blaze and a mass evacuation was soon under way.

The fire made rapid headway since most of the villagers were of the poorer class who lived in wooden huts. When word reached the ss WATER KNOT, Captain Gisch rushed the ship's hose into action and the blaze was quickly extinguished.

A grateful population was on hand to bid bon voyage to the WATER KNOT and her crew when the vessel sailed away from Guanta.

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E. D. FLAHERTY, former Secretary of the American President Lines who was recently appointed Operating Manager, succeeding JOHN KILPATRICK, who resigned on account of ill health. Mr. Flaherty joined APL in 1938 as General Office Manager.



New LA District Manager For Williams, Dimond & Co.

Leonard Formosa has been named district manager of Williams, Dimond & Co. at Los Angeles, succeeding Stafford S. Harlow, who has retired after 28 years service with American-Hawaiian Steamship Company, parent organization of Williams-Dimond.

Mr. Formosa was with American-Hawaiian from 1934 until the outbreak of World War II, when he served with the Army in the South Pacific and later at the San Francisco Port of Embarkation, leaving with the rank of Colonel. Recently he was with American-Hawaiian in Washington, D.C.

Williams-Dimond are Pacific Coast agents for American-Hawaiian.

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Pan-Atlantic Elects Parish Vice President

L. A. Parish was recently elected vice president of the Pan-Atlantic Steamship Corp., Mobile, Alabama, a wholly owned subsidiary of the Waterman Steamship Corporation. Pan-Atlantic is engaged in coastwise shipping service between Atlantic Coast Ports and Gulf Ports.

Mr. Parish joined the line in 1934, a year after it was established and for the past few years has served as manager. He is considered an outstanding expert on rail and ship rates and is a certified practitioner before the Interstate Commerce Commission.

Safety Council Awards Pacific American Tankship Assoc.

The Pacific American Tankship Association was presented a plaque from the Greater Los Angeles Chapter of the National Safety Council for an outstanding safety record during 1948, where many millions of barrels of flammable liquids were loaded and discharged from tankers without a spill.

Paul Lamb, Richfield Oil Corporation, 1st vice president of the association, accepted the award on behalf of the association.

Members of the Board of Harbor Commissioners and Civic dignitaries joined with representatives of the association in the presentation ceremonies at the California Club in Los Angeles.

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Hugh Gallagher, vice president of Matson Navigation Company, who was to take up duties in Washington, D. C., will, instead move to New York to take over general supervisory charge of the company's eastern affairs, according to an announcement by John E. Cushing, Matson president.

L. A. PARISH, new Vice President of the Pan-Atlantic Steamship Corp., Mobile, Alabama.



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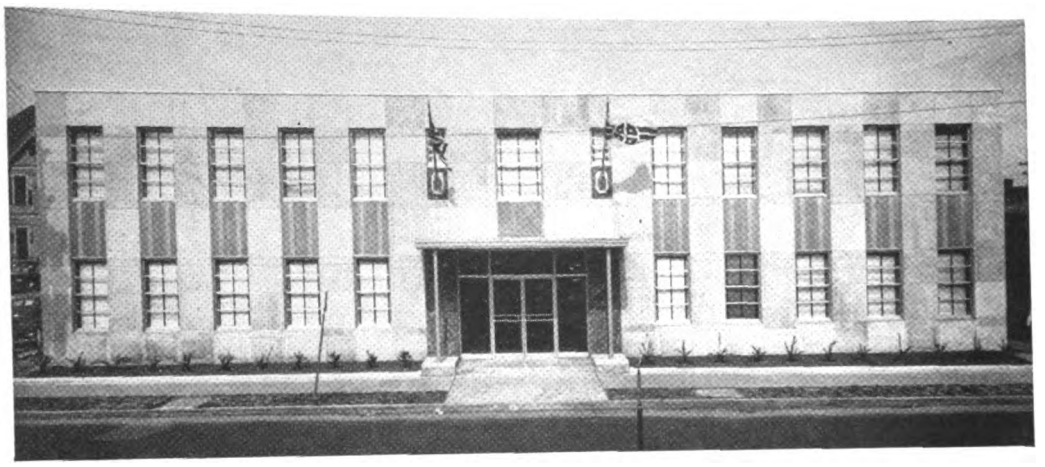
San Francisco—1401 Illinois St. MISSION 7-4520
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SHAFT ALLEY (continued) Chatter



ALCOA STEAMSHIP COMPANY'S NEW MOBILE BUILDING . . . This new modern office building with structural features of aluminum, was erected by Alcoa Steamship Company for its own use. According to J. A. Allain, manager of the local offices of the company, the building is a tribute to the growth and progress of Mobile which has become one of the most important ports in the United States and in recent years Alcoa has had increasing occasion to use its facilities.

New National Officers for Alumni Association

The Alumni Association of the United States Merchant Marine Cadet Corps elected Joseph M. Mahoney, class of '43, national president along with eleven other officers comprising the newly formed Board of Governors. Mr. Mahoney, holder of a Chief Engineer's license, served in the Navy as Chief Engineer aboard the U.S.S. MALOY and is now engineering instructor at the Seamen's Church Institute's Marine School.

The election, the second in the five year history of the growing young organization, marked completion of the association's plans to obtain national representation on its governing board, whose governors now represent all 48 states. The new Board will meet for the first time in the Port of New York at the Kings Point Club early this year.

The Alumni Association of the United States Merchant Marine Academy now becomes the third national professional marine society (the Society of Naval Architects and Marine Engineers and the Propeller Club being the other two) with local chapters in 16 cities throughout the country. The association also has four representatives overseas and is in the process of establishing many more in its efforts to adequately service the thousands of Alumni, who are ship's officers aboard American merchant vessels.

Other officers elected were: national vice president, R. C. Olund '40, Pacific Region; national treasurer, William Bittle '43, Atlantic Region; national secretary, Richard Fagan '45, Atlantic Region. Board of Governors: William Griswold '42, Atlantic Region, 4 year term; George Logue '44, Atlantic Region, 2 year term; A. D. Van Meter '46, Great Lakes Region, 4 year term; William Crilly '46, Great Lakes Region, 2 year term; A. J. Watson '42, Pacific Region, 4 year term; William Gibson '44, Pacific Region, 2 year term.

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American Bureau Announces Personnel Transfers

F. H. Gallagher has been transferred by the American Bureau of Shipping from Portland, Oregon, to become principal surveyor at Honolulu, T. H., replacing W. B. Murray, who has served his three years there and is returning for duty on the Pacific Coast.

John McKnight has been transferred by the Bureau from Los Angeles to Yokohama, Japan.

Jule E. Limoli is being sent from New York to Japan to work on shipbuilding plans there.

So. California Architects Install 1949 Officers

Thomas B. Forster, president, Forster Shipbuilding Company, Terminal Island, California, will succeed Karl French, naval architect, San Pedro, as chairman of the Southern California Section of The Society of Naval Architects and Marine Engineers at that organization's meeting in May.

New vice chairman of the section is James G. Craig, president, Craig Shipbuilding Company, Long Beach, and new secretary is Bert L. Hale, vice-president and manager of the Marine Solvents Service Corporation, Wilmington.

Carlton G. Reed, port engineer, Richfield Oil Company, was named to the executive committee, where he will serve with Kenneth M. Walker, marine surveyor, San Diego, and John T. Gilbride, general manager, Todd Shipyards' San Pedro yard.

A paper prepared by Charles W. Chattin, marine electronics engineer, San Francisco, titled "Marine Radio Telephony Takes on a New Look" was read by Mr. Hale at the February meeting of the section. Mr. Chattin brought out the fact that "the human voice is coming back into its own as a primary means of communication" at sea because of the increasing use of radio telephones.

Commander R. H. Wallace, USN, was on the program to deliver a paper at the section's meeting March 15th on "Longitudinal Vibration of Ship Propulsion Shafting."

The Southern California Section meets monthly on the third Tuesdays.

A trip to a Hollywood motion picture studio and a visit to the Long Beach Naval Shipyard are among the sightseeing events planned by the Southern California Section for entertaining the delegates returning to their eastern homes via Los Angeles from the Spring Meeting of the national Society at San Francisco May 12-13. Karl French is a member of the advisory committee in charge of the gathering.



GAVEL CHANGES HANDS—Left to right: BERT L. HALE and THOMAS B. FORSTER, new Secretary and Chairman, respectively, of the Southern California Naval Architects' Section; KARL FRENCH and ARTHUR R. PEGG, retiring Chairman and Secretary and JACK GILBRIDE, member of the executive committee.

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● Experimental laboratory condenser, with water boxes removed, designed by The American Brass Company and tubed with eight different copper alloys, as it appeared after 10-month test, July 28, 1947 to May 25, 1948, at the Marine Test Station of International Nickel Co., at Kure Beach, N. C. *(see above).*

ANACONDA Cupro-Nickel 754

(10 PERCENT NICKEL CONDENSER TUBE)

MANUFACTURED AND SOLD UNDER U. S. PATENT NO. 2,074,604

Shows High Resistance Under Accelerated Test

TEN months of testing with high velocity sea water at Kure Beach, N. C., demonstrate the superiority of Anaconda Cupro-Nickel 754 (nominal composition, copper 89.25 percent, nickel 10 percent, iron .75 percent) over a number of widely used condenser tube alloys.

The purpose of the test was to determine the resistance of various standard tube alloys to corrosion-erosion type of deterioration caused by turbulent flow of sea water. The tubes are .625″ O. D., 18 gage (.049″), and 61 inches long. The average velocity of sea water flowing through the tubes, during the continuous 10-month test, was 11.7 feet per second. Water temperature varied from 45°F. to 85°F., according to the season of the year.

This test, and performance records where Cupro-Nickel 754 tubes have been in service under severe operating conditions, indicate that this tube and tube sheet alloy will give economical service for central station and marine condensers handling clean and some types of polluted sea waters. The American Brass Company welcomes opportunities to discuss problems relating to condenser tubes, and the services of its Technical Department are available for assistance in selecting alloys to meet specific operating conditions. 49125

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CONDENSER TUBES

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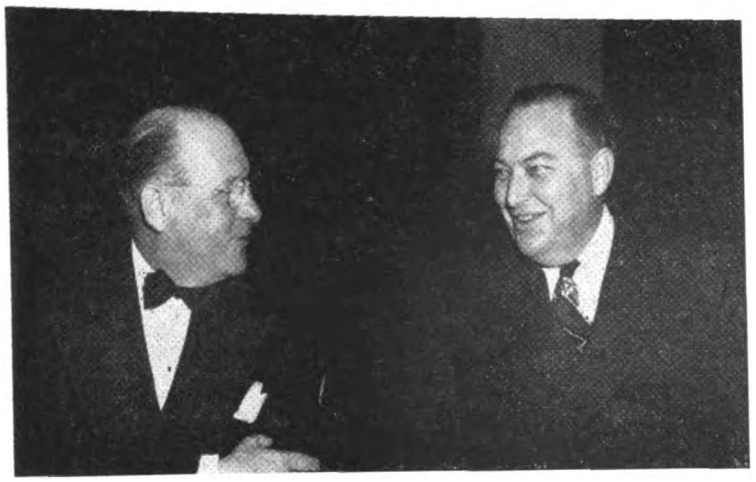
General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

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SHAFT ALLEY (continued) Chatter



PACIFIC TRANSPORT LINES has opened its own offices in Southern California with L. C. MUNSON, left, as Manager of the Los Angeles area, located at 609 South Grand Avenue, in that city, and CHAS. A. JONES, right, as Operations Manager at the firm's new harbor headquarters at Berth 230, Terminal Island, which they share with the Indies Terminal Company.

Both Mr. Munson and Mr. Jones were with Williams, Dimond & Company, which previously handled PT's business in the south on an agency basis. Mr. Munson was Vice President of W-D and Mr. Jones was Assistant Pier Superintendent.

Lykes Bros. Ships World's Largest Coal Mine Hoist

The world's largest coal mine hoist, shipping weight of the hoist and its motors was 1,197,830 pounds, sailed aboard the Lykes Bros. Steamship Company's vessel ss DWIGHT L. MOODY from New Orleans to Liverpool, England.

Fifteen railroad freight cars were required to transport the 161 pieces of the hoist to New Orleans for overseas shipment. Four additional freight cars were needed to move the hoisting motors of 1,750 horsepower each, from Pittsburgh to New Orleans. They were built by the Westinghouse Electric Corporation.

The total shipping weight of the hoist and its motors was 1,197,830 pounds. The largest single unit was the shaft, a solid piece of steel 41½ feet in length, 38½ inches in diameter, weighing 125,000 pounds. Four huge wheels, to serve as pulleys for winding cables for the hoist, were shipped as half wheels. Each half wheel weighed between 78,000 and 88,000 pounds.

Skilled in the handling of heavy lifts at New Orleans and the other ports that ring the Gulf of Mexico, Lykes Lines handled the loading of the tremendous pieces of the hoist without incident.



GEORGE H. BUSHNELL, recently named Southern California Manager for Pope & Talbot Lines, with offices in Los Angeles. Mr. Bushnell has been acting manager there. He started with Pope & Talbot in 1926, later was in Vancouver for the company and general agent at Oakland. In 1942, he was made assistant operating manager at San Francisco.

Seattle Chapter Of Merchant Marine Alumni Holds Election

The Seattle Chapter of the Alumni Association of the U. S. Merchant Marine Cadet Corps, Inc. has announced the election of Eugene Harrower as president; Warren D. Clark, vice-president; Albert J. Watson, secretary, and Hugh M. Wilson, treasurer.

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Sprague Steamship Personnel Changes

Sprague Steamship Company, Boston, have appointed Captain Soren Willesen marine superintendent to succeed Howard N. Tait, recently retired. George F. Bodemann has been appointed general traffic manager in addition to his present duties as manager of the New York office, succeeding Percy L. Stuart.

ALASKA STEAMSHIP COMPANY AGENTS MEET AT SEATTLE. The meeting was held in February coincident with announcement of the Alaska Line 1949 summer schedules. Pictured are: standing, left to right: A. N. MacCLELLAN, Freight Claim Agent, Seattle; Agents H. E. CHESEBROUGH, Seattle; THOS. J. MALONEY, Anchorage; W. W. SIPPRELL, General Agent, Seward.

Agents ROBT. G. GARDINER, Fairbanks; E. A. MARLAR, Kodiak; LEO McCORMACK, Wrangell; R. D. KELSEY, Valdez; W. R. WOOD, Nome; GEO. W. HOOKER, Skagway; WM. P. LOCKWOOD, Ketchikan; DICK MILLER, Petersburg; FRANK BURNS, Cordova; W. J. MANAHAN, Assistant General Traffic Manager, Seattle; K. A. CROSS, Assistant General Passenger Agent, Seattle.

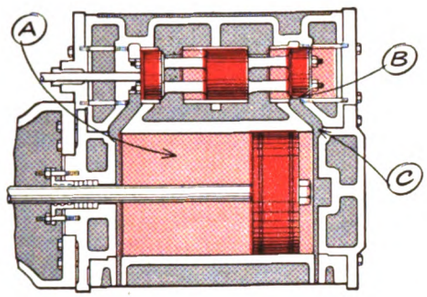
Seated, left to right: Agents IRA M. POWELL, Haines; H. E. GREEN, Juneau; FRED ARNOLD, Sitka; J. D. NELSON, Assistant General Traffic Manager, Seattle; REAR ADMIRAL F. A. ZEUSLER, USCG (Ret.), Executive Assistant to the President, Seattle; G. W. SKINNER, President, Seattle; G. S. DURYEA, General Freight & Passenger Agent, Ketchikan; H. N. PETERSON, General Traffic Manager, Seattle.



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STEAM ENGINE CYLINDER AND VALVE

In a group of steam engines of various types, Calol Cylinder Oils provided maximum lubrication efficiency in each one. The long list in this line includes oils with the special combination of properties to meet all different conditions of steam engine pressure, temperature and moisture. In addition, each has several general attributes that assure economical operation.

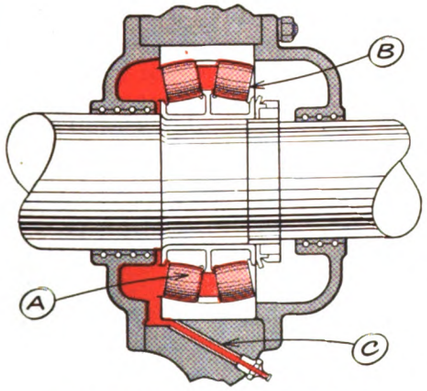
A. Good adhesion to surfaces reduces wear, prevents dry spots, scoring, and minimizes corrosion.

B. Minimum carbon formation—assured by use of selected oil stocks of proper characteristics.

C. Proper atomization and good dispersion of oil in steam—provided by correct viscosities.

To further meet various conditions, each Calol Cylinder Oil is suitable for use in a considerable range of steam temperatures and steam pressures and several choices are provided for each basic type of service.

Case 1150—Reducing Power Loss in Electric Motor Bearings



ELECTRIC MOTOR ROLLER BEARING

In an anti-friction bearing operated 528 hours at 10,000 rpm, and a temperature of 200° F., Calol Grease BRB-340 kept bearing surfaces in good condition and showed no sign of separation. Recommended for all anti-friction bearings, but particularly for electric motor bearings where speeds are high.

A. Softens to oil-like consistency around moving rollers and balls, but resets quickly when swept to sides maintaining tight outer grease seal—reduces frictional loss to the minimum and loss of lubricant.

B. Resists extreme temperatures and deterioration and is chemically neutral — promotes economy through long use without harm to bearing parts.

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SHAFT ALLEY (continued) Chatter



PORT STEWARDS INSTALL OFFICERS . . . MAITLAND S. PENNINGTON (second from left) Vice President, Pacific Transport Lines, San Francisco, shaking hands with EUGENE M. BLANK, Pope & Talbot Lines, newly-elected 1949 President of The Port Stewards' Association of the Pacific Coast. At the extreme left is PAUL BAKER, Pacific Transport Lines, Treasurer and on the right are GILBERT NELSON, Sudden & Christenson, Secretary, and HARRY CHRISTENSON, Williams, Dimond & Co., member of the executive committee.

Port Stewards Install New Officers

"The happiest ship is the ship with the best steward's department," declared Maitland S. Pennington, vice president, Pacific Transport Lines, Inc., San Francisco, in expressing management's view of the port steward when he installed the 1949 officers of The Port Stewards' Association of the Pacific Coast at its February meeting.

E. M. Blank, Pope & Talbot lines, took office as president, succeeding Timothy Mullins, American President Lines. New vice president is A. L. Bissell, Weyerhaeuser Steamship Co., secreta y is Gi - bert Nelson, Sudden & Christenson and treasurer is Paul Baker, Pacific Transport Lines.

Members of the executive committee are the above officers and Tom Taylor, Pacific Far East Line; Harry Christenson, Williams, Dimond & Co. and Con Crimmins and Tim Mullins, American President Lines.

New members elected were Johnny Bates, States Marine Corporation and Clarence Grochowski, Pacific Transport Lines.

It was announced that Frank B. Ingham, head of the commissary department of the Maritime Service Academy at Alameda, again would be chairman of the committee in charge of the association's golf tournament and banquet to be held at the Green Hills Country Club, Milbrae, in August. Mr. Ingham, formerly with the United States Lines, has been chairman of the August event for the past three years.

⚓ ⚓ ⚓

Capt. Reagh Returns from SCAP Assignment in Japan

Recently returned to his desk as superintendent of operations for the American President Lines at Wilmington, California, is Captain William S. Reagh, who left in December, 1947, as a member of a three-man committee sent by the National Federation of American Shipping to Tokyo to serve with the operations branch of the water division of the civil transportion section of general headquarters of SCAP to study the Japanese maritime industries and recommend steps for their rehabilitation.

The other two members were E. E. Anderson of the American Mail Line, Seattle, and Arthur Syran of the United States Maritime Commission. The committee surveyed Japanese shipping, shipyards and port and harbor facilities and received high praise from Army officials for its work.



SOUTHERN CALIFORNIA APL CHIEFS—Left to right: CAPTAIN CHARLES E. GERTRIDGE, Superintendent of Stevedoring Operations, transferred last fall from San Francisco; CAPTAIN WILLIAM S. REAGH, Superintendent of Operations; GEORGE H. HOXIE, Port Engineer and R. F. ROBBINS, who was acting Superintendent while Captain Reagh was in Japan and who has returned to his post as District Claims Agent.

Captain Reagh has been with the American President Lines since 1926, sailing as a deck officer and serving ashore as a passenger agent. He is a graduate of the Massachusetts Nautical School at Boston.

During World War II he was a commander in the United States Navy in charge of merchant shipping in Iceland and Japan.

Rear Admiral J. R. Stika, USCG, commanding 13th Coast Guard District, has been assigned to relieve Rear Admiral W. K. Scammell, as commander Western Area and commander, 12th Coast Guard District, with headquarters at San Francisco. Rear Admiral Raymond T. McElligott has been assigned to relieve Admiral Stika at Seattle.

⚓ ⚓ ⚓

Grant Phillips Manages New LA Shipping Line

Named general manager of a newly-formed shipping line, The Marine Express Line, is Grant E. Phillips. The new company, with offices at 220 South San Pedro St., Los Angeles, has inaugurated a regular monthly service from Los Angeles Harbor to Lower California and West Coast Mexican ports. Service commenced with the berthing of the ms CLEMENTE.

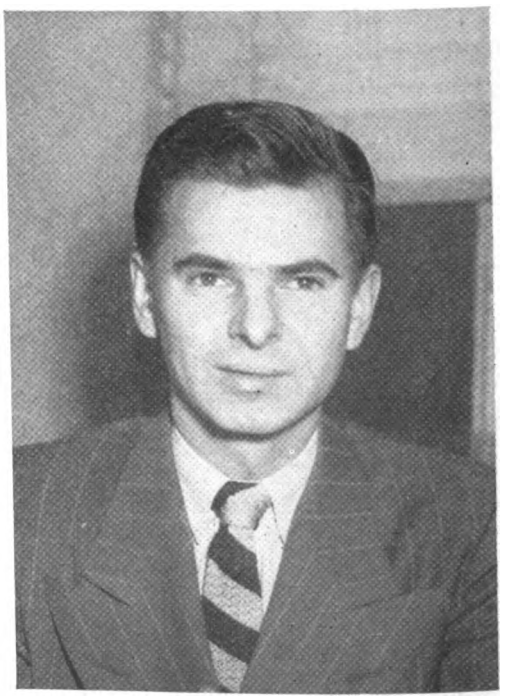
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Captain Anderson Succeeds Morrison At Pacific Tankers

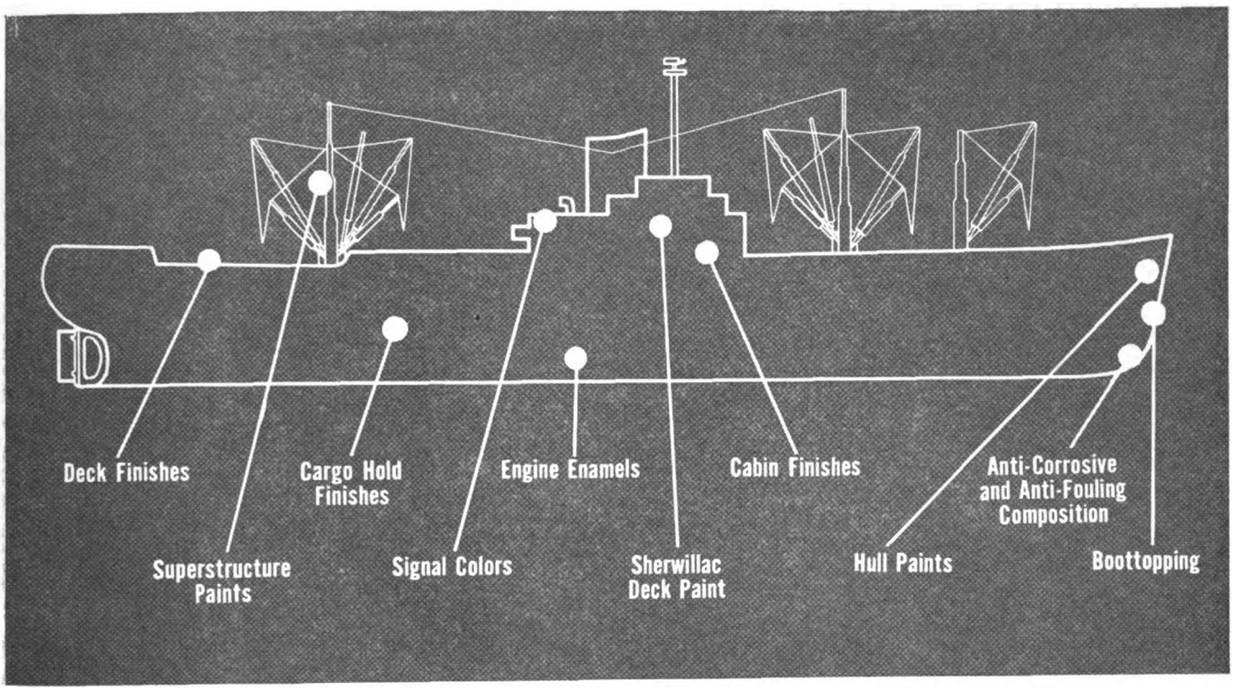
Captain T. W. Anderson has been named general superintendent of Pacific Tankers, Inc., at San Francisco, succeeding Captain Frank J. Morrison, who has gone with Overseas Tankship Corporation, New York. Captain Anderson formerly was the Washington, D. C. representative of Pacific Tankers and previously with the company at Gulf of Mexico ports.

Pacific Tankers also announces the resignation of Captain F. T. Rogers, assistant port captain, who has joined the New York staff of Foreign Tankship Corporation.

CAPTAIN T. W. ANDERSON, recently appointed General Superintendent of Pacific Tankers, Inc., San Francisco.



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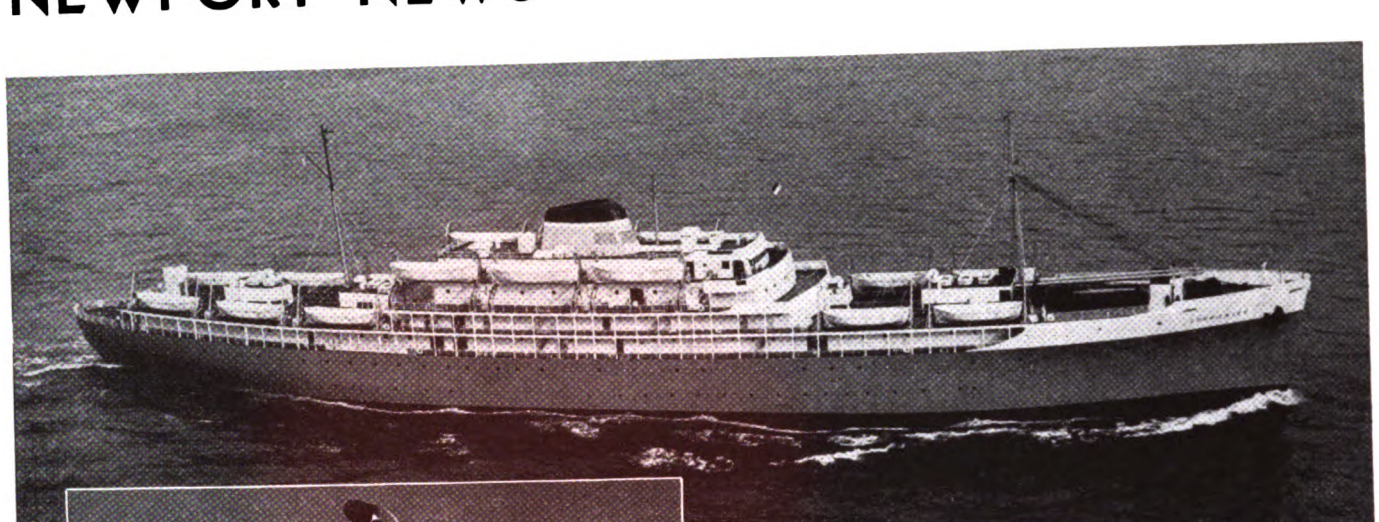
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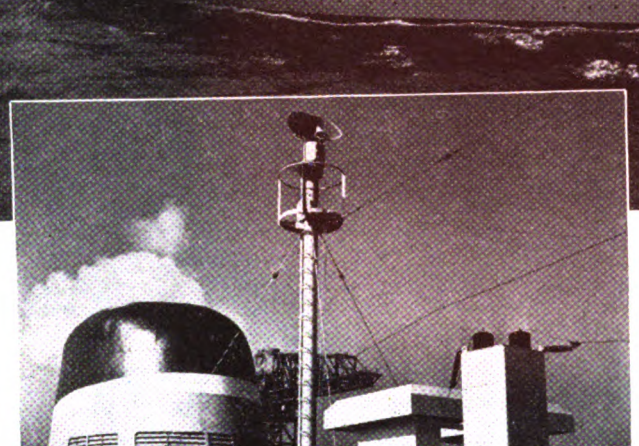
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NEWPORT NEWS CONVERSION . . .





1949 STYLE

The CORRIENTES, a former C-3 type escort aircraft carrier was converted at Newport News for emmigrant passenger service between Italy and Argentina. Her modern appointments include a colorful lounge, completely equipped hospital, laundry, and a dining saloon seating 673 persons. The family size staterooms for four and six persons, all with running water, will accommodate a total of 1352 passengers.

The conversion of the CORRIENTES and her sister ship the SALTA add two more names to the long list of Newport News conversions that in recent years have included vessels for more than a dozen specialized uses.

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Congress Stands Squarely Behind a Better Merchant Marine

A fine statement of Congressional policy toward an American flag Merchant Marine was made by the House Committee on Merchant Marine and Fisheries when it reported out H.R. 1340. Such a strong statement of position by unanimous Committee vote should be read and remembered by everyone so there will be no occasion for further questioning of the intent of Congress on maritime legislation. The statement of the Committee is as follows:

"The purpose of this bill is to clarify and strengthen the intent of Congress as expressed in Section 111(a) (2) of the Foreign Assistance Act of 1948 (Public Law 472, 80th Congress), that not less than 50% of goods procured within the United States out of funds made available under that Act shall be transported on American-flag ships. H. R. 1340 goes further, and specifies that a similar policy shall apply to commodities procured by funds made available under *any* Government-financed program, except that cargoes carried on vessels under the jurisdiction of United States military authorities shall be excluded from consideration when making the computation.

"This bill provides that to the extent that United States flag vessels are available in sufficient numbers and at market rates for United States flag vessels, such vessels shall be used to carry at least 50% of commodities procured for transportation by water under any Government-financed program providing loans, grants-in-aid, or credits or funds therefor. The determination of the degree of participation by American flag shipping in Government-financed cargoes shall be made both with reference to the gross tonnage thereof and the gross freights thereon, irrespective of the points of origin or destination of the commodities. The Committee feels that no fair evaluation of the United States flag participation can be made unless the freight revenues are taken into account as well as the gross tonnages.

"Moreover, it is intended that the computation will be made on a country by country basis rather than on an overall resulting average. Your Committee feels that such provision is essential to the interest of the American merchant marine generally, and is the only feasible means of enforcing the intent of Congress with respect to United States flag participation in Government-financed programs.

"In this connection the elimination of the 'country-by-country' provision would be destructive to American shipping in the North Atlantic trades in particular. It happens that the so-called 'maritime nations,' which have protested most strongly against this provision are concentrated in Scandinavia and northern Europe. At the present time strictly commercial cargo is moving in these areas in very small volume because it is being displaced by grants-in-aid cargoes. If no commercial cargo is available over these routes and if our American ships cannot carry at least half of the ECA grants-in-aid cargoes, United States flag shipping lines which traditionally have been operating over these routes would be practically put out of business.

"It should be noted that in keeping with our national maritime policy as set forth in the Merchant Marine Act of 1936, certain American lines are under contract with the United States Government to provide and maintain frequent and regular United States flag services between the United States and the northern European and Scandinavian areas. These lines are required under their contracts to maintain the regularity of their service irrespective of cargo offerings. But freight revenues are essential to the maintenance of such services.

"In addition there are other major operators in the American merchant marine not under Government contract, who have developed more or less regular services to and from these and other areas and whose existence is equally affected by these considerations. Certainly these American companies, so important to our national defense and our economy, should not be displaced in favor of the merchant marines of foreign nations, many of which are not even recipients of our foreign economic recovery programs and some of which have grown to major size because of their laws and sub-standard requirements.

"On the other hand, the merchant marines of the countries in the northern European and Scandinavian areas do not depend for their existence upon commerce to and from the ports of their particular countries. They are largely carriers of the commerce of other countries. For example, in the Pacific trades there are a great number of Danish, British, Dutch, and Norwegian ships carrying cargoes entirely extraneous to their homeland.

"Your Committee considered proposals that cargoes which neither originate in or are designated for ports of the United States, its territories or possessions, should be excluded from the scope of the bill. The Committee is of the opinion however. that American shipping is entitled to at least 50 percent of all cargoes purchased by funds made available under programs financed by our Government, irrespective of points of origin or destination. Incidentally, with regard to regular United States flag services traditionally operating between the United States and other countries, there can be no question that the American operators of such services are entitled to participation in a fair share of cargoes originating on and destined to points on or adjacent to their regular trade routes, which they are serving frequently and regularly either by contract with our Government or otherwise. It is believed that participation in these so-called 'cross-trades' is important and that such administrative difficulties as there

(Continued on Page 31)

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WHO WANTS TO FLY?

(Photo courtesy Moore-McCormack Lines)

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GOVERNMENT POWER GRAB STARTS ARMY PASSENGER SHIP SERVICE

Industry facing six-pronged attack from Army readies guns for counter offensive.

Since The LOG opened its attack against the Army's encroachment of private commercial shipping, it has become increasingly evident that the battle which is brewing behind the scenes in Washington will have to be fought on many fronts. In fact, it seems wherever the commercial merchant marine turns it runs smack into this aggressive foe.

Latest power grab of the military is represented by the President's order turning over the C-4 passenger ships now operated by commercial companies under general agency agreement with the Maritime Commission to the Army Transportation Corps. This action of the President, typical of some of his previous hasty moves, was predicated upon figures submitted by the Budget Bureau showing that the Army is operating these C-4's in the displaced persons movement considerably cheaper than is the Maritime Commission.

To date no one has seen these figures. However, at a general meeting between industry and labor in Washington, overall strategy was planned for launching a counter attack against the Army shipping operations, leading off with the transfer of these C-4's. Senator Warren Magnuson will request the Bureau of the Budget to turn over the figures it used in determining the costs of operation. These figures will be studied and compared with figures provided by the Maritime Commission and the steamship companies operating the C-4's. The result of this study will largely determine further action.

Both labor and industry feel it will be found such things as port charges against the vessels, costs of shoreside operating personnel, etc., are not charged against the Army vessels even though these costs exist. It will be a new experience, indeed, if the Army can run a ship more economically than a private company.

The real danger in this transfer of ships to the Army is not so much the matter of turning over the nine vessels involved as the precedent it sets, and the further encroachment it represents. The Army will be in the trans-Atlantic passenger service in a big way with the addition of these ships in which they will be hauling paying passengers. And certainly past experience proves it will be no easy matter to get the Army out of this business. For the past three years the Army has been "talking" about getting out of the shipping business, and while it "talked" it busied itself with expanding its operations.

Second Front

The "second front" in the industry's counterattack to regain lost shipping will be directed at the Army's participation in the ocean transportation of cargo competitive with commercial shipping operations. This will get the whole-hearted support of labor and will be aired in the halls of Congress. The ammunition to be used will be found in the accompanying tables.

The Army currently controls the use of 241 merchant type dry cargo vessels suitable for commercial operation. These vessels total 2.3 million dwt. Army control of these vessels results from four different arrangements as follows with the number of vessels controlled under each arrangement shown:

1. Direct ownership	36
2. Bareboated directly from Maritime Commission	47
3. Per diem charter from private operators of vessels originally bareboated from the M. C.	130
4. Per diem charter of privately owned vessels	28
	241

The 83 merchant type cargo vessels owned directly by the Army and bareboated directly from the Maritime Commission are shown according to type in Table I. This table also shows Army control (via direct ownership and direct bareboat charter) of commercial type cargo vessels converted for personnel transport service. In addition there is also shown the merchant type tankers under the control of the Army and commercial type cargo vessels in use under the SCAJAP and Korean Programs, all of the latter group are bareboated from the Maritime Commission and appear in the last column of Table I.

Table II shows the 54 vessels of 389,000 dwt. bareboated directly to the Army by the Maritime Commission and represents a further breakdown of Table I. Of these vessels one is a tanker, 6 have been converted for transport use, and 47, totaling 319,000 dwt., are commercial type cargo vessels as follows:

N-3's	8
C1-M-AV1's	12
R-1's	5
EC-2's	10
Z-EC-2's	4
AP-2's	1
AP-3's	3
C-2's	4
	47

These 47 cargo vessels are in use in the following areas:

SCAJAP	18
Korea	8
Alaska	4
Europe	7
Pacific	8
Panama	1
Intercoastal	1
	47

In addition to the vessels shown in the first two tables, the Army is currently using 130 vessels which are Maritime Commission owned and bareboat chartered to private operators who in turn have chartered them to the Army on a per diem basis. These 130 vessels consist of 120, EC-2's; 6, AP-2's; 3, AP-3's; and 1, R-2. These vessels are time chartered to the Army by the following companies:

Alaska S/S	3
American-Hawaiian	11
American Mail	1
American Pacific	1
Black Diamond	2
Burbank & Co.	1
Burns S/S	1
Chamberlin, W. R.	3
Coastwise	3
Dichman, W. & P.	3
Eastport S/S	2
Fall River	3
Fribourg	1
Grace	1
Isbrandtsen	5
Luckenbach	10
Lykes	1
Mormac	3
N. Atlantic & Gulf	2
Olympic	2
Pacific Far East	4
Pacific Atlantic	4
Pittston Marine	4
Polarus	5
Pope & Talbot	2
Prudential	2
Roundtree	4
Shepard	4
Smith & Johnson	2
South Atlantic	9
Stevenson	3
Sudden & Christenson	6
U. S. Lines	1
U. S. Navigation	2
Waterman	11
Wessel Duval	3
West India S/S	1
Stockard	4
	130

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TABLE I

Merchant Type Vessels Under Control of Army

January 1, 1949

(Owned & Bareboated Directly from Maritime Commission)

(Gross and deadweight tons in 000's)

Type	Total			Commercial Cargo Type—Suitable for Commercial Cargo			Commercial Cargo Type—Converted for Transfer Use			Commercial Cargo Type—In Use Under SCAJAP & Korean Programs		
	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT
Dry Cargo												
N3-S-A2	8	15.0	22.1	..	.....	.....	..	.....	.....	8	15.0	22.1
C1-M-AV1	27	102.7	135.2	19(a)	72.3	95.2	..	.....	.....	8	30.4	40.0
C1-B(b)	3	20.1	27.3	..	.....	.....	3	20.1	27.3	..	.....	.....
C2-SU	1	8.6	8.6	1	8.6	8.6	..	.....	.....	..	.....	.....
C2-S-B1(c)	3	20.5	24.3	3	20.5	24.3	..	.....	.....	..	.....	.....
C2-S1-A1	3	22.5	10.8	..	.....	.....	3	22.5	10.8	..	.....	.....
C3-S1-A3	2	23.9	14.4	..	.....	.....	2	23.9	14.4	..	.....	.....
C3-IN*	4	48.1	26.0	..	.....	.....	4	48.1	26.0	..	.....	.....
C4-S-A1*(d)	25	323.4	153.8	..	.....	.....	25	323.4	153.8	..	.....	.....
C4-S-B1	1	11.5	13.2	1	11.5	13.2	..	.....	.....	..	.....	.....
EC2-S-C1	11	79.7	112.5	..	.....	.....	1	7.9	5.5	10	71.8	107.0
Z-EC2-S-C5	8	57.5	85.1	8	57.5	85.1	..	.....	.....	..	.....	.....
VC2-S-AP2	18	136.9	196.2	18	136.9	196.2	..	.....	.....	..	.....	.....
VC2-S-AP3	12	91.3	129.3	3(e)	22.8	32.2	9*	68.5	97.1	..	.....	.....
R1-M-AV3	4	15.1	17.2	4	15.1	17.2	..	.....	.....	..	.....	.....
P2-S2-R2*	2	35.6	16.4	..	.....	.....	2	35.6	16.4	..	.....	.....
P2-SE2-R1*	8	131.2	70.4	..	.....	.....	8	131.2	70.4	..	.....	.....
1928 Act*	1	11.5	6.2	..	.....	.....	1	11.5	6.2	..	.....	.....
E.F.C.	1	12.6	11.9	..	.....	.....	1	12.6	11.9	..	.....	.....
Foreign Construction	2	39.2	18.7	..	.....	.....	2	39.2	18.7	..	.....	.....
Total Dry Cargo	144	1,206.9	1,099.6	57	345.2	472.0	61	744.5	458.5	26	117.2	169.1
Tankers												
T1-M-BT2	1	3.2	4.2	1	3.2	4.2	..	.....	.....	..	.....	.....
Private	1	1.7	2.8	1	1.7	2.8	..	.....	.....	..	.....	.....
Total Tankers	2	4.9	7.0	2	4.9	7.0						
Grand Total	146	1,211.8	1,106.6	59	350.1	479.0	61	744.5	458.5	26	117.2	169.1

* Also Cargo Space.
(a) Two of which have been refrigerated.
(b) Hospital Ships.
(c) Refrigerated
(d) Six in use with International Refugee organization.
(e) In Mortuary Service.

TABLE II

Merchant Type U. S. M. C. Vessels Bareboated by the Army

January 1, 1949

(Gross and deadweight tons in 000's)

Type	Total			Commercial Cargo Type—Suitable for Commercial Cargo			Commercial Cargo Type—Converted for Transfer Use			Commercial Cargo Type—In Use Under SCAJAP & Korean Programs		
	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.
Dry Cargo												
N3-S-A2	8	15.0	22.1	..	.....	.....	..	.....	.....	8	15.0	22.1
C1-M-AV1	12	45.6	60.3	4(a)	15.2	20.3	..	.....	.....	8	30.4	40.0
C1-B	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
C2-SU	1	8.6	8.6	1	8.6	8.6	..	.....	.....	..	.....	.....
C2-SB1(b)	3	20.5	24.3	3	20.5	24.3	..	.....	.....	..	.....	.....
C2-S1-A1	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
C3-S1-A3	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
C3-IN	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
C4-S-A1	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
C4-S-B1	10	71.8	107.0	..	.....	.....	..	.....	.....	10	71.8	107.0
EC2-S-C1	5	53.3	36.0	5	53.3	36.0	..	.....	.....	..	.....	.....
Z-EC2-S-C5	1	7.6	10.9	1	7.6	10.9	..	.....	.....	..	.....	.....
VC2-S-AP2	8	60.8	86.3	3(c)	22.8	32.2	5*	38.0	54.1	..	.....	.....
VC2-S-AP3	4	15.1	17.2	4	15.1	17.2	..	.....	.....	..	.....	.....
R1-M-AV3	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
P2-S2-R2	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
P2-SE2-R1	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
1928 Act	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....
E.F.C.	1	21.3	12.2	..	.....	.....	1	21.3	12.2	..	.....	.....
Foreign Construction	53	319.6	384.9	21	143.1	149.5	6	59.3	66.3	26	117.2	169.1
Total Dry Cargo												
Tankers												
T1-M-BT2	1	3.2	4.2	1	3.2	4.2	..	.....	.....	..	.....	.....
Total Tankers	1	3.2	4.2	1	3.2	4.2	..	.....	.....	..	.....	.....
Grand Total	54	322.8	389.1	22	146.3	153.7	6	59.3	66.3	26	117.2	169.1

* Also Cargo Space.
(a) Have been refrigerated.
(b) Refrigerated.
(c) In Mortuary Service.

According to the latest information, these same 130 per diem chartered vessels are bound for or returning from the following countries:

Japan	69
China	15
Germany	24
Trieste	16
Netherlands	4
Denmark	2
	130

In addition to the vessels mentioned above, the Army had at the end of last month 28 privately owned vessels on per diem charter (24, EC-2's; 2, C-3's; 1, AP-2's; and 1 miscellaneous type). Ownership of these vessels is shown as follows:

American Foreign S/S	2
American Hawaiian	1
American Mail	2
Blidberg & Rothchild	1
Cosmopolitan	1
Edison S/S	1
East Harbor Trading	1
Fall River Nav.	1
Gen. Freight & Brokerage	1
Olympic S/S	1
Pacific Transport	1
Polarus S/S	2
States S/S	2
States Marine	1
Union Sulphur	1
West Coast Trans-Oceanic	3
Waterman S/S	5*
Wessel Duval	1
	28

*Under notice of cancellation by Army.

Table III shows merchant type vessels under the control (all by direct ownership) of the Navy. 59 of these vessels are commercial cargo type suitable for commercial cargo services, 82 are commercial type converted for personnel transport use, and 66 are commercial cargo type vessels converted for special military uses. The Navy owns, in addition, 97 tankers of over 1.6 million dwt.

Flank Attacks

In addition to the major problem of getting the Army out of the shipping business, the industry is also involved in a struggle with the Military Establishment on several other fronts. These are: revival of the Japanese shipping and shipbuilding industry which the Army has well underway; lifting the lid on German shipbuilding to permit construction of 10,000-ton cargo ships and unlimited high speed passenger ships; increased Panama Canal tolls to provide for such things as schools, highways, civil government in the Canal Zone; passage of the St. Lawrence Seaway bill which the Army is backing.

All in all it looks as though the industry will have its hands full this year just holding its ground against the Army. The

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TABLE III

Merchant Type Vessels Under Control of Navy January 1, 1949

(Gross and deadweight tons in 000's)

Type	Total			Commercial Cargo Type— Suitable for Commercial Cargo			Commercial Cargo Type— Converted for Transport Use			Commercial Cargo Type— Conv. for Special Military Use		
	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.
Dry Cargo												
C1-M-AV1	4	15.2	20.1	4	15.2	20.1	..	.....	.....	..	.....	.....
C1-A	2	10.1	14.8	1	5.0	7.4	..	.....	.....	1	5.1	7.4
C-2	6	38.9	56.2	4	26.6	37.8	..	.....	.....	2	12.3	18.4
C2-F	4	27.0	36.0	4	27.0	36.0	..	.....	.....	..	.....	.....
C2-T	2	16.1	18.6	..	.....	.....	..	.....	.....	2	16.1	18.6
C2-S-AJ1	18	148.7	194.1	..	.....	.....	..	.....	.....	18	148.7	194.1
C2-S-AJ3	5	41.3	33.5	5	41.3	33.5	..	.....	.....	..	.....	.....
C2-S-B1	26	163.4	209.2	22	138.9	171.7	..	.....	.....	4	24.5	37.5
C2-S-E1	2	12.3	21.8	2	12.3	21.8	..	.....	.....	..	.....	.....
C-3	6	47.2	73.7	..	.....	.....	..	.....	.....	6	47.2	73.7
C3-(P)	3	29.9	27.5	..	.....	.....	3	29.9	27.5	..	.....	.....
C3-(P&C)	4*	37.0	40.1	..	.....	.....	4*	37.0	40.1	..	.....	.....
C3-S-A1	1	7.8	12.5	..	.....	.....	..	.....	.....	1	7.8	12.5
C3-S-A2	10	78.0	124.6	6	46.8	74.6	..	.....	.....	4	31.2	50.0
C3-S1-B1	1	7.8	7.3	..	.....	.....	..	.....	.....	1	7.8	7.3
C3-S1-N2	1	7.8	7.5	..	.....	.....	..	.....	.....	1	7.8	7.5
C4-S-B2	6	67.8	79.8	..	.....	.....	6	67.8	79.8	..	.....	.....
EC2-SC1	23	165.0	248.4	..	.....	.....	..	.....	.....	23	165.0	248.4
VC2-S-AP5	57	441.8	327.3	..	.....	.....	57	441.8	327.3	..	.....	.....
R1-M-AV3	9	34.2	39.9	9	34.2	39.9	..	.....	.....	..	.....	.....
R2-S-BV1	2	12.4	15.0	2	12.4	15.0	..	.....	.....	..	.....	.....
P2-S2-R2	6	106.9	58.2	..	.....	.....	6	106.9	58.2	..	.....	.....
Misc. M.C. (P.&C.)	4*	31.9	32.2	..	.....	.....	4*	31.9	32.2	..	.....	.....
Private Construction	3	23.4	38.2	..	.....	.....	..	.....	.....	3	23.4	38.2
1928 Act	1	24.3	13.2	..	.....	.....	1	24.3	13.2	..	.....	.....
Foreign Construction	1	16.7	9.8	..	.....	.....	1	16.7	9.8	..	.....	.....
Total Dry Cargo	207	1,612.9	1,759.5	59	359.7	457.8	82	756.3	588.1	66	496.9	713.6
Tankers												
T1-M-BT-1	1	3.2	4.1	1	3.2	4.1	..	.....	.....	..	.....	.....
T1-M-BT-2	1	3.3	4.2	1	3.3	4.2	..	.....	.....	..	.....	.....
T-2	7	70.9	112.9	7	70.9	112.9	..	.....	.....	..	.....	.....
T2-SE-A1	16	165.0	267.7	16	165.0	267.7	..	.....	.....	..	.....	.....
T2-SE-A2	39	411.1	640.8	39	411.1	640.8	..	.....	.....	..	.....	.....
T2-SE-A3	1	10.7	16.4	1	10.7	16.4	..	.....	.....	..	.....	.....
T3-S-A1	2	20.0	32.8	2	20.0	32.8	..	.....	.....	..	.....	.....
T3-S2-A1	24	272.1	441.0	24	272.1	441.0	..	.....	.....	..	.....	.....
T3-S2-A2	5	57.6	92.0	5	57.6	92.0	..	.....	.....	..	.....	.....
Private Construction	1	12.0	20.0	1	12.0	20.0	..	.....	.....	.....	.....	.....
Total Tankers	97	1,025.9	1,631.9	97	1,025.9	1,631.9	..	.....	.....	..	.....	.....
Grand Total (a)	304	2,638.8	3,391.4	156	1,385.6	2,089.7	82	756.3	588.1	66	496.9	713.6

* Also Cargo Space.

(a) (Excludes 5, S-4 Vessels basically designed as military type totaling 31.1 gross tons 12.7 dwt.)

Military, however, in the best campaign strategy, is attacking with such rapidity on so many fronts the industry has not yet had sufficient time to launch a real counter attack. Its efforts so far have been merely holding tactics. Watch for a full scale battle to be launched sometime this spring.

Congress Stands Behind Our Merchant Marine

(Continued from Page 27)

may be will be soluble.

"The bill further provides that the computation shall be made separately for dry bulk carriers, dry cargo liners and tanker services, in order that all segments of the American merchant marine may receive equal treatment. In this connection, only 23% of ECA petroleum cargoes has been carried by United States flag tankers. A great portion of the total tanker cargoes has been transported in the cross-trades, and by foreign flag tankers. This bill would remedy this situation and greatly increase the number of United States flag tankers, so necessary for our national defense, on the high seas.

"Your Committee recognizes that there are conceivable circumstances under which United States flag vessels may not, at a particular time, be available in sufficient numbers or at market rates for United States flag vessels to effectuate the purposes of the bill. To meet such eventualities, provision is made for the United States Maritime Commission, when and if such circumstances arise, to certify to the department, agency, or instrumentality of the Government charged with the administration of the laws under which funds are made available for the procurement of commodities for a particular aid program, that United States vessels are not available in sufficient numbers or that the rates are in excess of market rates for United States flag vessels.

"To aid in the enforcement of the provisions of the bill it is provided that no recipient of commodities of the character described therein shall be entitled to reimbursement for expenditures made unless at least 50 per centum of any cargo to be paid for thereby shall have been transported in United States flag vessels as provided in the bill. In this connection, the bill as reported by your Committee relates only to commodities transported by water on and after the date of its enactment. The Comptroller General of the United States suggested an amendment designed to facilitate the settlement of accounts, the objective of which your Committee did not disapprove. However, it is believed that such provision is unnecessary in this legislation and that the Comptroller General is vested with sufficient powers and authority to handle the problem administratively.

"Subsection (b) of the bill provides that all federal departments and agencies are authorized and directed to cooperate with the Maritime Commission by entering into and carrying out such agreements as may be necessary to effectuate the purposes of the bill, with the further proviso that the Commission shall report to Congress within 90 days after the enactment of the bill and every 4 months thereafter. Moreover, it is provided that the records of the several departments, agencies or instrumentalities involved shall be available for public inspection insofar as such records relate to the transportation of commodities as provided in the bill.

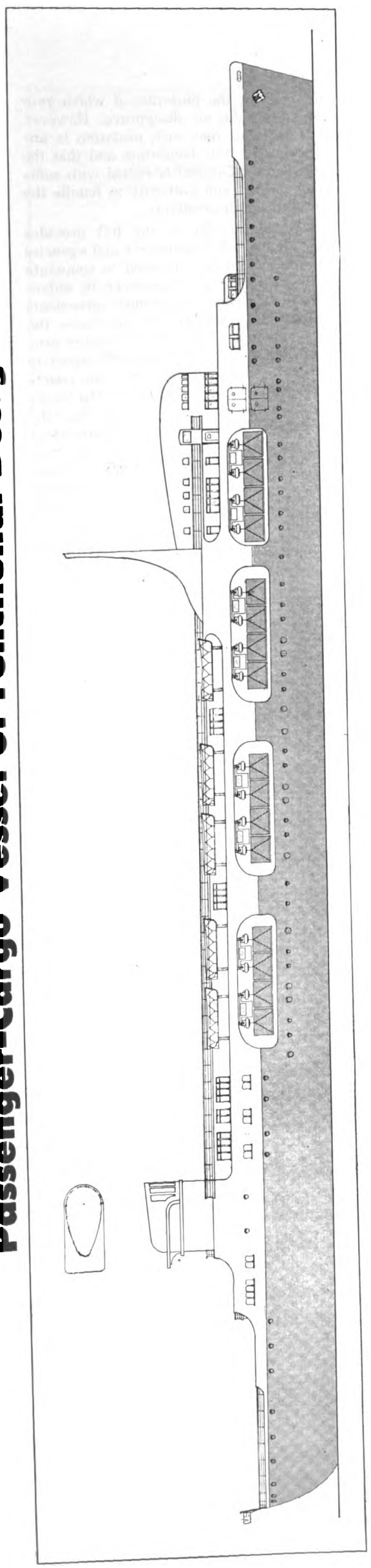
"Your Committee recognizes that in the transition of the American merchant marine from wartime to peacetime status, Government participation in nonmilitary shipping should not be terminated abruptly. However, all steps possible should be taken, with the least delay, to assure the return of the entire American merchant marine to private ownership and private operation. The pursuit of this policy carried great weight in the conclusion of the Committee that cargoes carried under the jurisdiction of the United States military authorities should be excluded in the computation of the minimum percentage of United States flag participation within the purview of the bill.

"In the course of hearings on this bill, several matters of importance were brought to the attention of the Committee but were not included therein since the Committee did not feel that it was the proper medium for legislative action in those matters. For instance, it appears that American-owned marine insurance companies are being deprived of a large amount of insurance business, which but for the policy of the ECA would be available for the strengthening of this very important element of the American merchant marine. The Congress has several times in the past forcefully stated its position with regard to fostering the growth of the American marine insurance market. It is the consensus of your Committee that the ECA and all other administrative agencies of the Government should keep cognizant of the policy heretofore expressed by Congress on this subject. In this connection your Committee is advised that the ECA is presently endeavoring to review its policies in regard to insurance to cooperate with the marine insurance industry.

"There was likewise discussion of the American freight forwarding industry which plays a very important part in the efficiency of American transportation generally and the American merchant marine in particular. Here again it is the

(Continued on Page 34)

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Passenger-Cargo Vessel of Functional Design

NEW SHIP DESIGN SPEEDS TURNAROUND, CUTS CARGO COSTS

By A. PAUL De LORENZO

The need for a radical departure in loading technique for cargo vessels is becoming increasingly apparent as the present-day methods approach the limit of their efficiency, and, of more importance, as the cargo-handling costs absorb a larger and larger portion of the total operating cost of a vessel. This article will review and discuss briefly the merits and the limitations of present or recently-suggested methods for increasing the efficiency of cargo loading, evolve and present a set of basic principles for optimum efficiency, and describe and illustrate a proposed type of cargo vessel incorporating these features. Finally, it will show how readily this vessel is convertible—should a national emergency require it—to a troop transport fully equipped and self-protected.

Of the major cargo-handling techniques, the following will be considered representative for the purposes of this article:

The Burtoning Cargo Gear, the Farrell Improved Burtoning Gear, the Cargo Crane aboard ship, the Cargo Crane on the pier, the Harnischfeger Loading Device for ships, the Extensible Boom, and the SEA HAWK'S Overhead Crane.

Because of its extensive use, the Burton System can be established as the reference line for all others. New arrangements are judged according to their promise of "beating the Burton's time of loading."

Farrell Burton Arrangement

The Farrell Burton Arrangement claims advantages resulting in time savings in the order of 20%. It does not eliminate the limitations of the Burton System; the need to rig and stow the booms; the cumbersome manipulations of a swinging load; and the limited range for spotting the load, attached with each setting of the booms.

Cargo Crane

The Cargo Crane on the ship is fast, but again, the spotting of the load is limited by the locus of the hook. Cranes have been developed with a hoisting hook that travels along the arm of the crane. This improves the range of positions the loads can be dropped in; however, the disadvantage of the large sweeping arm, which prevents multiple loading of a single cargo hold, is inherent. Too, the larger structure affording higher latitudes for placing the loads involves sizes which add considerably to the deadweight.

The Cargo Crane on the pier is a large costly structure, requiring considerable working clearance and therefore the number of cranes usable at each pier is limited. This restricts the "simultaneous loading and unloading operations" possible; from a time-saver angle this is a serious limitation.

Harnischfeger Loading Device

The Harnischfeger Loading Device has many advantages. It has a variable over-the-side reach. It can spot a load anywhere within the range made possible by the hatch arrangement employed. The motion of the load is majorly a non-swinging motion which allows a faster operation and the disadvantage of high C.G. is overcome by stowing the apparatus in a collapsed position. However, it too is a massive structure, and therefore the number it would be practical to use on a vessel is limited to two at the most. Again we are handicapped by the fact that only a small number of loads can be handled simultaneously.

Extensible Boom

The Extensible Boom, proposed solely as an idea for efficient loading, falls in a category with the pier crane and the Harnischfeger loading device in that the supporting structure so exceeds in tonnage the pay load handled.

SEA HAWK Overhead Crane

The SEA HAWK's overhead crane has received a good sea trial. It is not the answer. Large top weights; fixed over-the-side reach; the need to rig and stow a difficult arrangement of gear; the lack of multiple loading facilities for a single hatch—these are all serious disadvantages difficult to eliminate.

From a review of the various articles written* and from a recognition of the advantages previously indicated for the cargo gears discussed, the following basic principles can be established here:

a) Hoisted loads should travel the

*For a more elaborate treatment of the subject of cargo handling, reference is made to Mr. L. H. Quackenbush's extensive and thorough analysis of cargo handling techniques published in The LOG, March and April, 1948.

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shortest possible path from pier to final position on ship. A great advantage is obtained when loads can be set directly in their final stowed position.

b) As many loads as possible should be handled simultaneously without sacrificing efficiency of the lift.

c) The hoisting gear deadweight should be a minimum; for new arrangements it should if possible not exceed the combined weights of winches, kingposts, and booms.

d) Hoisting gear should be readied for use with a minimum of preparation.

e) The over-the-side reach of the cargo hook should be variable to adjust readily for different pier arrangements.

f) The operator should be in good visual range of the load at all times.

g) The cargo gear should be flexible enough to handle loads of various tonnages.

The illustrations accompanying this article are plans for a passenger-cargo vessel of functional design embodying the basic principles above. Rapid preparation to load or unload; direct placement of cargo; variable over-the-side reach: each item has been considered in developing this design and the advantages have been realized in the following manner.

By employing a machinery-aft design, the placement of the parallel middle-body is made available as ideal cargo space for the conventional random packages or for container units presently returning to favorable use by many shippers. The handling gear is arranged as shown, and spacing allows four hoists at each cargo hold. Each hoist is designed to handle a ten ton load, permitting multiple lifts up to 40 tons. The hoists are cable-driven on I-beam runways which are arranged so that each pair forms a rigid travelling platform, also cable-driven, to permit full transverse motion of the hoist from 15′-0″ over-the-side port to a similar position starboard. It will be noted that a large percentage of cargo motion can be accomplished with hoist travel alone and, to small degrees, a combined motion of hoist and platform is required. This, however, cannot be considered a time saver, since a skilled operator can effect both motions simultaneously.

Advantage of Transverse Girders

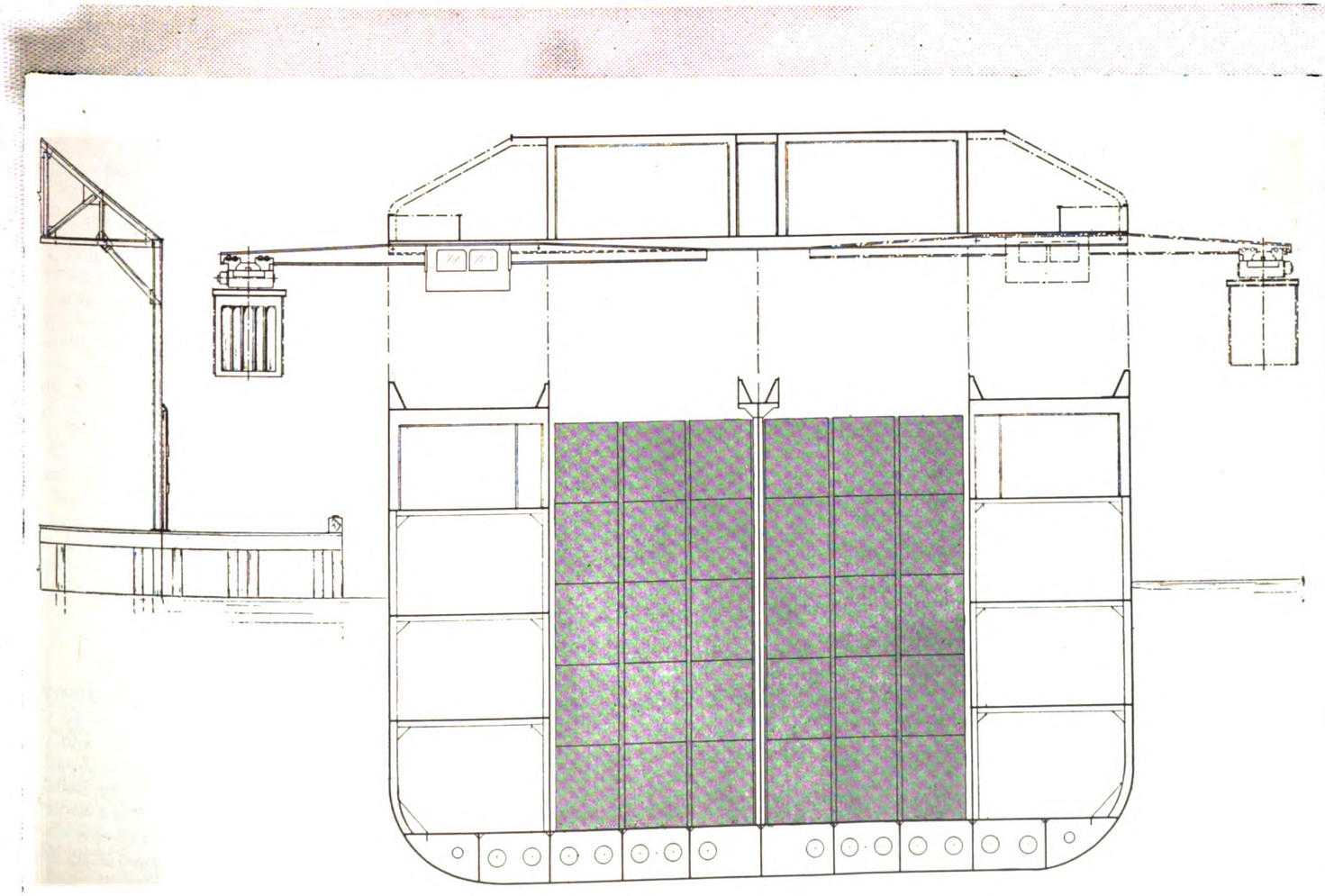
A major advantage is gained by the use of transverse girders, suspended from points of support afforded by superstructure longitudinal bulkheads, as raceways for the hoist platforms. These girders, by supporting the deck beams, serve a dual function, and offer a saving in deadweight charged against cargo-handling gear.

The operator's cage, which also houses the cable-drive winch, is mounted straddling each pair of hoist beams and in a position to allow the operator full and continuous view of the moving load.

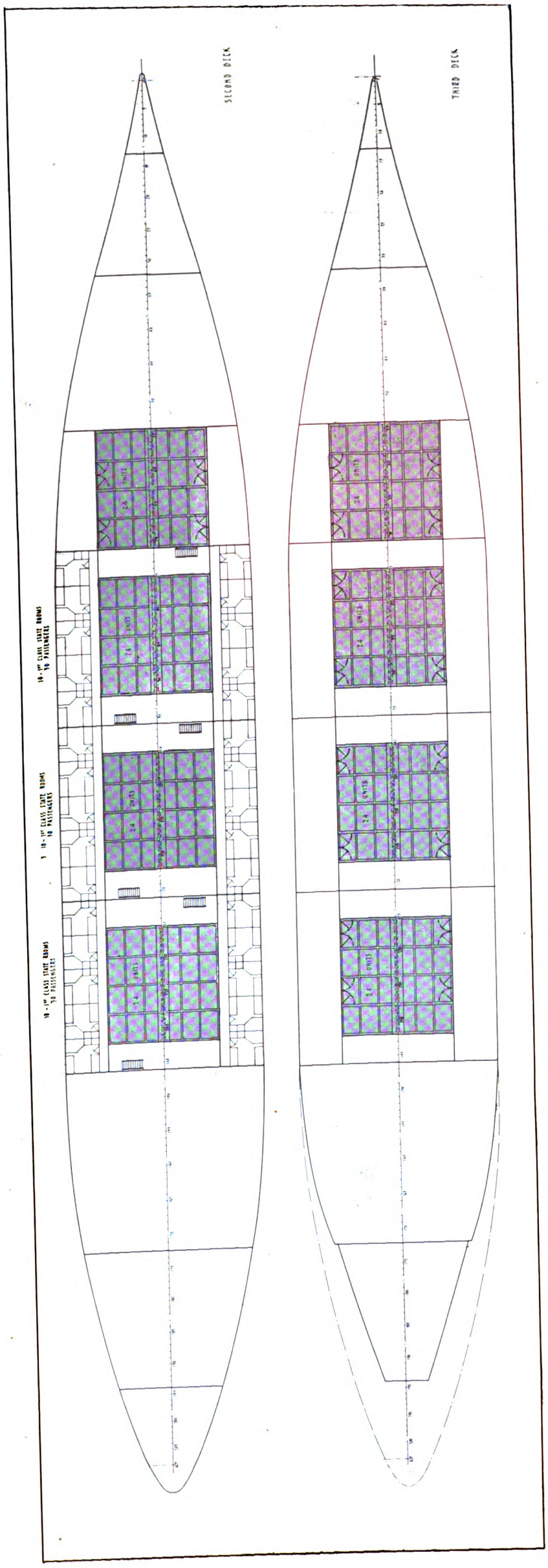
The ship design in general centers about a suitable arrangement for the fastest possible loading and unloading of cargo. Longitudinal bulkheads are used as main strength members and to square off the ships sides, reducing to a minimum the spaces not available to a direct placement of the load. The second deck space so formed at the ship's side is arranged as shown into excellent passenger quarters, each room equipped with a bath and accommodating three persons. Access direct to dining and recreation areas in upper decks is afforded by passageways at each end of the compartments. Shipside spaces below the second deck are assigned to miscellaneous cargo not originally stowed in containers and to refrigerated cargo if required.

The dining and recreation rooms and additional passenger spaces are arranged on the boat deck and the forward portion of the upper deck. Crew's quarters are readily distributed in remaining portions of the vessel.

The prime advantage of the design lies in the extremely rapid rate of loading attainable. A ship of this design entering port is geared to load immediately after the main deck hatches are unbattened. The platforms are run out to whatever



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over-the-side reach is required by the pier arrangement and for a four-hold ship, sixteen loads averaging 7 pay tons each can essentially be set in simultaneous motion. By a travel of the hoist alone, or by a combined travel of hoist and platform, the loads can be placed directly where finally stowed. The first two tiers require a half container "pull-over" for packages stowed at the compartment ends, which is readily accomplished with snatch blocks.

The arrangement of twin-hatches and of rooms and cargo spaces as illustrated with this article offers only one solution for the use of this loading system. It is obvious that hatch arrangements such as those employed by the lake ore boats can be considered, eliminating all side spaces and passenger rooms below the main deck. This will afford an increase in direct-loading cargo space and a decrease in passengers carried. Such flexibility will surely be required by designers.

Conversion to Troop Transport

As a supplementary feature, thought has been given to the basic arrangement necessary to permit a ready conversion to a troop transport, should a national emergency demand such action. The uptakes have been kept to the ship's side, affording a direct means for extending the top deck to the stern for a plane deck. Troops would be quartered in the spaces now assigned to passengers and side cargo spaces. Landing craft and full combat equipment would be handled by the hoists acting in multiple and could be launched quickly and efficiently. The number two cargo space would be equipped with an elevator for plane stowage. Thus a reasonably self-sufficient troop transport and baby carrier would be available.

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Congress Stands Behind Our Merchant Marine

(Continued from Page 31)

consensus of your Committee that the fullest use of the services of American freight forwarders should be made in carrying out Government-financed programs for foreign relief, rehabilitation and recovery.

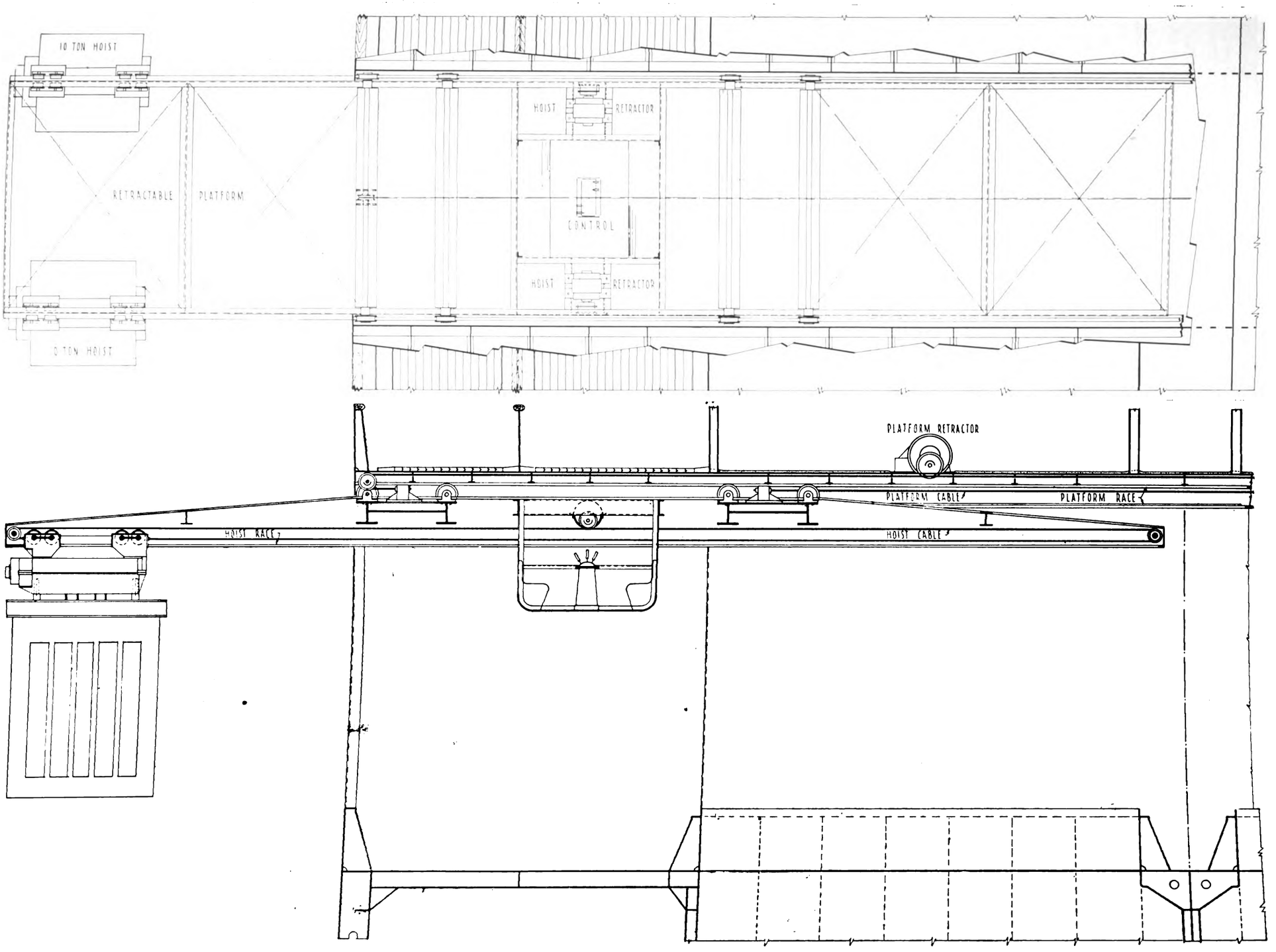
"It is the unanimous opinion of your Committee that H. R. 1340 is highly important legislation and will permit the most effective carrying out of the Congressional intent previously expressed with regard to United States flag participation in Government-financed programs and is essential to the interest of the American merchant marine. Your Committee therefore unanimously reports this bill and urges its enactment."

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Protests Against Closing California Maritime Academy

A committee has been named by the Board of Harbor Commissioners and the Chamber of Commerce of Los Angeles to protest a recommendation by Rolland Vandegrift, California legislature auditor, that the California Maritime Academy at Vallejo be abandoned because of its high per capita cost of instruction.

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A SCHOOL FOR SHIPBUILDERS

One of the most enlightened labor policies in American industry today can be found at the Newport News Shipbuilding & Dry Dock Company in Newport News, Virginia. Yet it is not a labor policy as such. Nor is it new. It started in 1894 when the first apprentice was graduated from the company's regular apprentice school.

Today this school stands out from the hundreds of "apprentice" programs being conducted throughout industry. It stands out because of its basic concept as well as its courses of study. The usual idea behind apprentice training is to teach a man as little as necessary for him to get by in his trade, and then turn him loose to learn for himself. The Apprentice School at NNSB&DD Co. turns out a far different kind of worker.

Underlying principle of the school is the belief that a man, to be a good worker, must be a good all around citizen of the community. Importance is laid strongly on the man as a "whole" rather than as a unit of work hours. Among the first

Apprentice (left) ramming up a green sand mold with pneumatic hammer. Below an apprentice works on a pattern for a small turbine runner in the Newport News Shipbuilding & Dry Dock Company mold loft.



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things a new apprentice is taught in the company school are building character, personal safety, manners and proper conduct, how to study, habits and their formation, the emotions and behavior.

In addition to the technical subjects and the practical work a student receives at the school he is thoroughly grounded in such subjects as English grammar, public speaking, industrial economics, and plant management. The school curriculum provides for intercollegiate sports, arts, journalism, student self-government, social functions, and other activities calculated to round out a raw youngster into a man sufficiently developed to be an asset to his community.

What's in it for the company? Well, of course, there's the satisfaction of seeing the end product of this training. But more important the company has a ready fund of manpower from which to draw its supervisory personnel. It has on tap men who have studied and know its management policies; men who have studied and know the trade of shipbuilding; above all it has men who are loyal, contented members of the unique community society. There are no strings attached to this education. A man is paid while he learns and is free to leave when he wants. But almost to a man, excepting the ravages of the war upon the training program, the apprentices are still with the company.

The company seldom advertises for its apprentices. Applications flood in from all over the country from which are selected the most promising young men. Preference is given first to sons of company employees, but aside from this applicants are selected upon the basis of physical fitness and scholastic attainment. A high school education plus special requirements in mathematics are requisites.

When a candidate applies for an apprenticeship he indicates the trade in which he would prefer to work. He can choose from among the following:

Anglesmith	Mold Loftsman
Blacksmith	Painter & Decorator
Boilermaker	Patternmaker
Coppersmith	Plumber
Draftsman	Sheet Metal
Electrician	Ship Carpenter
Joiner	Ship Fitter
Machinist	Ship Rigger
Millwright	Shipwright
Molder	Tool & Die Maker

The length of apprenticeship is four years for all trades with the exception of draftsman which is a five year course. Apprentices are required to attend classes for the first three years during their working hours at their regular rates of pay. Premium pay is received for any overtime worked, but overtime is not counted toward the length of the apprenticeship. The apprentice pay scale at present is as follows:

1st six month term	$0.97 per hour
2nd six month term	1.03 per hour
3rd six month term	1.15 per hour
4th six month term	1.21 per hour
5th six month term	1.29 per hour
6th six month term	1.35 per hour
7th six month term	1.41 per hour
8th six month term	1.53 per hour

Classroom instruction serves three main purposes. (1) It provides support to the shop training programs by giving the necessary instruction in allied subjects such as drawing, physical sciences, mathematics, and the fundamentals of marine engineering and naval architecture. (2) It prepares the apprentice for future promotion to, and development in, supervisory and executive positions by courses in industrial economics, plant management, supervision, and additional instruction in mathematics and engineering. (3) Through special courses, lectures, and experience it provides the student with the opportunity to develop into a useful citizen of the community.

The academic instruction is divided into nine quarters of twelve weeks each. Although an apprentice may be employed at any time during the year, new academic classes are started only at the beginning of one of the regular quarters. During the first five quarters a student attends classes two mornings per week for a total of ten hours and during the last four quarters he attends classes two afternoons per week for a total of six hours. For the nine full quarters the total number hours of instruction is eight hundred and eighty-eight.

From time to time, as the need for draftsmen arises, apprentices in the various trades whose shop and school grades are exceptional are offered the opportunity of transferring to one of the apprentice drawing rooms. There they are trained to be hull, engine, piping, or electrical draftsmen. The total term for apprentice draftsmen is five years, during which they receive about fifteen hundred hours of classroom instruction.

Training on the job is divided into three fields: (1) the apprentice training system, (2) general shop work, and (3) work done on the ships. At all times the student is under the supervision of his instructors. He is initially assigned to a given shop. The instructor receives him in the apprentice training system and trains him in the fundamentals of his trade. The training is exceedingly thorough. Speed is not essential. The primary requisite is that the apprentice shall turn out work of good quality. In fact, his product is usually required to be superior to that produced by the journeymen in the shop.

When, in the opinion of the instructor, the apprentice has learned sufficient of the fundamental operations he is placed in the shop or on the ship. He may occasionally be returned to the training sections for further training, after which he is again sent out to the shop or ship. But, in general, the training is continuous and complete in each training section until such time as the apprentice, late in his apprenticeship, is merged with the production force. Even then, however, he is supervised by his instructor.

While they are in training the students

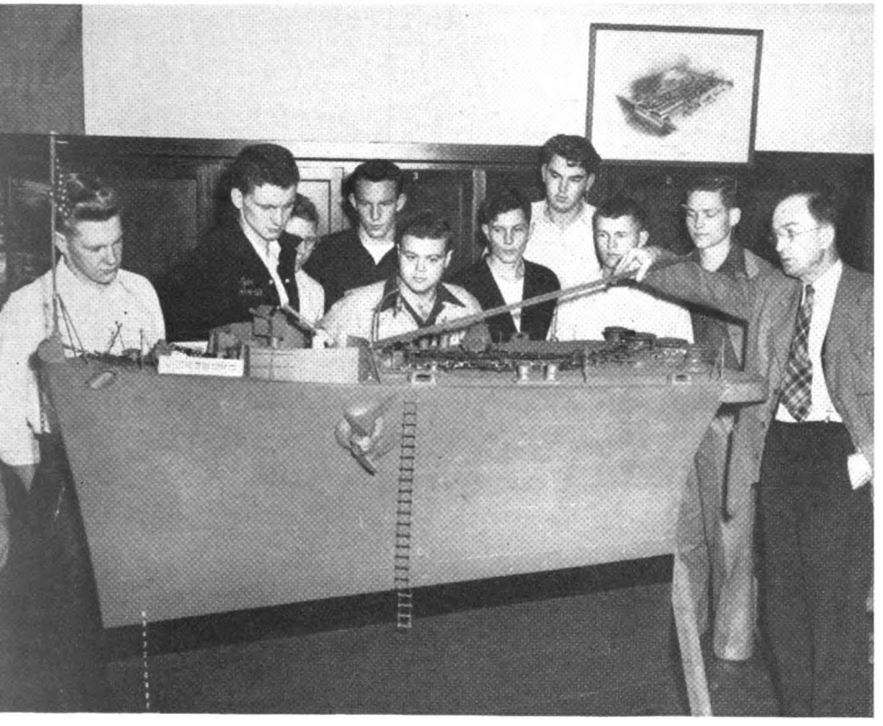
Taking the temperature of molten brass in the pouring ladle this apprentice is learning his way around the brass foundry. Students are paid for work and school, starting at $.97 per hour and working up to $1.53 per hour by the end of their four year course.

Removing the mold from cope half of a special casting. Drag can be seen in the foreground. Students are selected according to their physical fitness and scholastic attainment. Sons of company employees are given a preference.

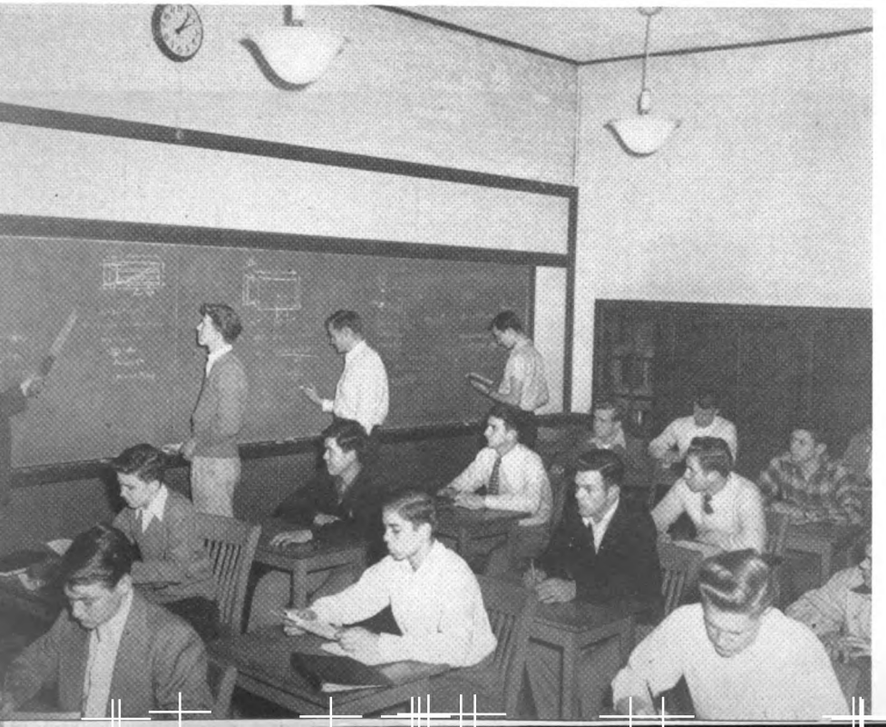
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Apprentice draftsmen at work in drawing class. Draftsmen are selected for exceptional work during the first few months of apprentice training. This course takes five years and requires fifteen-hundred classroom hours.



Victory ship hull model is used in the study of naval architecture. Apprentices get a thorough grounding in naval architecture and marine engineering as well as the physical sciences and chemistry.



Classroom work totals nearly nine hundred hours for students other than draftsmen. Emphasis is placed on mathematics. Thorough basic education in grammar, social conduct, as well as sports and other extracurricular activities are designed to produce a well-rounded member of the community.

are housed in a modern dormitory with recreation rooms and lounges. They have an athletic building, football and baseball field, track, and other sports facilities. The company cafeteria and new modern hospital provide for all their requirements. The school has a junior college rating and many of its courses are given college credits when students continue their education.

Does the management of Newport News Shipbuilding & Dry Dock Company think this training program worth while? The answer is a very definite "yes."

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1948 Ship Tonnage Launched Reached Postwar Peak

Merchant ship tonnage launched during 1948 reached a higher level than in any year of the postwar period. The volume of launchings declined in Great Britain and Ireland, the United States and the British Dominions, but increased in all the other leading maritime countries, says a statement just issued by Lloyd's Register of Shipping. This includes all merchant vessels of 100 gross tons each and upwards, with the exception of figures for such countries as Russia, Japan and Germany, for which returns have not been available.

Merchant shipping launched throughout the world aggregated 2,309,743 gross tons as against 2,111,886 gross tons in 1947, says Lloyd's Register.

The comparison of the tonnage launched in Great Britain and North Ireland, the United States and all the other maritime countries reporting, taken as a group, for the past two years, is shown by Lloyd's Register in the following table, figures representing gross tons:

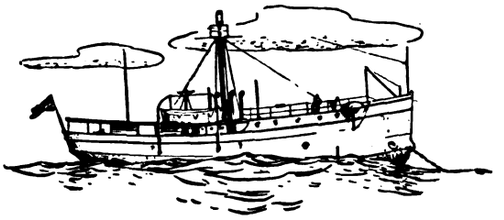
	1948	*1947*
Great Britain and North Ireland	1,176,346	1,202,024
United States	126,418	164,848
Other Countries	1,006,979	745,014
	2,309,743	2,111,886

Included in the tonnage launched in the United States in 1948, is 107,087 gross tons built on the Atlantic Coast, 2,915 tons on the Great Lakes, and 15,524 tons at Gulf ports.

Comparing the British and American output, Lloyd's Register states that during 1938, the last prewar year, about 5 tons of merchant shipping were being produced in Great Britain and Northern Ireland for every 1 in the United States. In the war period, however, far more tonnage was produced in the United States than in any country in the world. In 1945, more than 6 tons were produced in American shipyards to 1 in Great Britain and Northern Ireland. But in 1946, the British launchings more than doubled the American tonnage figure. In 1947, 7 tons of British shipping were launched for every 1 in the United States. And during 1948, more than 9 tons were produced in British yards for every 1 in the United States.

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How coast guard lightships quench their thirst



Simple, new, tubeless still delivers 1100 gals. daily, ends scaling troubles

Stationed for months far out on the rolling ocean, the problem of maintaining ample fresh water was a serious one to the crews of Coast Guard lightships.

They needed a simple, trouble-free distillation unit that would quickly produce an abundance of fresh water from the salty sea... without corrosion or frequent scaling troubles.

The Maxim Silencer Company of Hartford, Conn., studied these problems and designed a distillation unit that solves them all. In fact, after severe tests, this unit proved so efficient that the Coast Guard ordered them installed on 29 of its lightships.

This new still produces 1100 gallons of fresh water per day. And, it operates at low pressure... on exhaust steam.

In operation, this unit blows off 1 pound of brine concentrate for every pound of fresh water that it makes. This relatively low brine concentration means a minimum of scaling.

And when some scale eventually does form, descaling is easy. The Maxim still has no tube bundles. Instead there are two corrugated chambers of thin (.043 in.) sheet. One evaporates sea water, the other is a condensing chamber. To descale, you simply let 15 pounds of steam into the evaporator section, followed by cold sea water. The steam pressure expands the thin evaporator walls. Then the cold water condenses the steam, pulling a vacuum that sucks the wall inward. This flexing pops off scale accumulations.

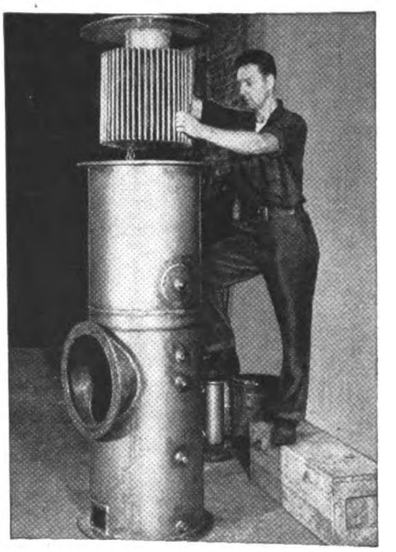
To take this flexing, and resist the corrosive action of boiling concentrated brine, the finned evaporator chamber must be a material that is strong, ductile, tough, corrosion-resistant... and *able to maintain these qualities.*

Maxim engineers found the answer in Monel*.

In fact, wherever they require a strong, corrosion-resistant material throughout the entire still—for piping, flanges, float chamber and elliptical Nicholson float, even for the lightweight outer shell of ⅛ inch sheet—they use Monel for long, trouble-free service life.

Find out more about this unit. Here is a long-lasting, dependable, and unusually economical source of fresh, pure water for thirsty men or boilers.

Here also is another interesting illustration of how durable, corrosion-resistant INCO Nickel Alloys are serving modern Marine Engineers.



MAXIM DISTILLING UNITS consist of a cylindrical outer shell of ⅛" Monel. Inside are 2 identical corrugated Monel chambers. The lower one is the evaporator, the upper one the condenser. The evaporator is mounted on a steam chest.

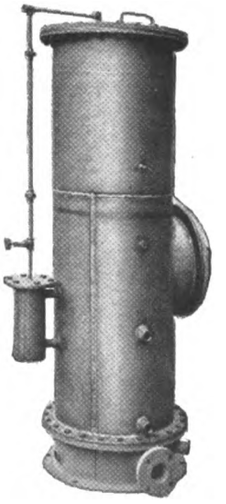
The all-important corrugations are visible in the condenser section shown above.

In operation, sea water is admitted through the top section of the shell, where it circulates through the upper chamber as *cooling* water. From there, at a temperature of 200° it passes through a float valve, which controls the water level, and thence around the evaporator section. Steam inside the evaporator section now boils the water and the vapor produced rises toward the condenser section. There it condenses, collects, and is led off by a distillate pipe.

• • •

Upper photo shows installation of Monel condenser section.

Below is a completely assembled Maxim unit. For full information write to The Maxim Silencer Company, Hartford, Conn.



THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET, NEW YORK 5, N. Y.



Monel* EMBLEM OF SERVICE INCO TRADE MARK

"...It's the SEAGOIN' metal"*

*Reg. U. S. Pat. Off.

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WASHINGTON Reporting

By The LOG's Own Correspondents

From SCAP To Jap With Compliments

The Supreme Commander Allied Powers, General Douglas MacArthur, has handed the conquered enemy some attractive shipbuilding contracts with his compliments. While shipping men the world over boil, SCAP calmly approved the contracts for Japan to build an 18,000-ton tanker for Norway at a reported price of $2,500,000 (slightly cheaper than in USA).

Also it is reliably reported that SCAP either has, or is about to okay contracts calling for another 18,000-ton tanker for Norway, a 17,500-ton tanker for Denmark, and six large whalers for Norway. In addition to this we have allocated steel to Norway totaling 300,000 tons and approved 50,000 tons for Denmark, to be used for shipbuilding purposes.

All of which amounts to pretty heavily subsidizing foreign merchant marines to drive our own from the high seas. We are not only making the steel available to these countries, we are letting them order ships from conquered Jap yards at half the price they would cost in this country.

According to official U.S. Maritime Commission statistics the Norwegian merchant fleet stood at 3,856,500 gross tons as of June, 1948. 3,500,000 tons now on order will bring this fleet to almost 7.5 million tons compared to Norway's 1939 fleet aggregating only 4,449,086 tons.

To add insult to injury, SCAP has issued invitation for bids on agency service to be provided to Japanese-owned tonnage operating under control of the Shipping Control Authority, Japanese Merchant Marine, at Hong Kong, Manila, Bangkok, Singapore, and Calcutta. All evidence which points toward large-scale revival of Japanese ocean shipping.

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Hart Bill Kicks Military Out Of Commercial Shipping

A bill introduced into the House by Representative Edward J. Hart (D), N.J., is designed to get the Military Establishment, both Army and Navy, out of the commercial shipping business.

Section four of the bill provides: "Notwithstanding any other provision of law, except while the United States is at war or during periods of national emergency as proclaimed by the President, the armed forces shall not operate merchant vessels other than those specifically constructed or adapted to military use, or used directly in military operations as contrasted to normal cargo-carrying operations: *Provided,* that sufficient privately operated tonnage documented under the laws of the United States is available at reasonable rates."

This bill would do the trick all right except for the final phrase, "available at reasonable rates." Congress should have learned its lesson on the ability of the Administration to twist this seemingly innocent phrase to its own purposes. Representative Hart sat through long hearings at which ECA Administrator Paul Hoffman explained how he planned to scuttle the legislation of Congress through his interpretation of rate provisos.

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House Committee Give Shipping Big Boost In ECA Bill

The House Merchant Marine Committee unanimously reported out a bill which will make ECA Administrator Hoffman wish he had never tried to twist the intent of Congress. The new bill (H.R. 1340) makes the original simple statement in the ECA Act providing for U.S. flag ships to carry 50 percent of ECA financed cargoes look like an administrative joy ride.

The biggest boost to the American flag Merchant Marine is a provision which states flatly that when computing the 50 percent all shipping under military jurisdiction be *excluded.* In effect this means a 20 percent increase in ECA cargo shipments in U.S. commercial bottoms, since to date the Army has been carrying 20 percent of the U.S. 50 percent share (See The LOG, *Washington Reporting,* for March).

In addition to this, the final draft of the legislation provides for computation of the 50-50 split on a country by country basis, as well as separately for dry cargo liner, dry cargo bulk, and tanker services. This stops the ECA and the State Department from building up their favorite Merchant Marines (Britain, Norway, France and Italy) at the expense of the U.S. fleet. Hoffman's proposal to abandon this clause was specifically for the purpose of throwing the lion's share of the foreign shipping participation to Britain and Norway.

The provision for computing the cargoes separately for tanker, bulk, and liner services will stop the practice of giving the high-paying freight to foreign countries. On this basis the liner freight will be split on a 50-50 basis as well as the bulk and tanker cargoes.

This bill will probably pass the House without amendment but informed sources on Capitol Hill are expecting the ECA and State Department to stage a last ditch fight to the Senate to put it back in the emasculated form which the Maritime Commission proposed under Administration pressure.

Senate Bill Would Oust Oil Company Tanker Operations

A bill introduced into the Senate by Senator Gillette, and referred to the Senate Committee on Judiciary, would put the major oil companies now operating large fleets of tankers out of the shipping business.

The bill (S. 573) would make it unlawful for any person to be directly or indirectly engaged in the transportation of petroleum products while such person or affiliate of such person is also engaged in one or more of the three branches of the petroleum industry, namely production, refining, and marketing.

The penalty for violating the provisions of this Act would be a fine of $10,000.

It would be the duty of the Attorney General immediately to examine the relationships of persons now engaged in one or more branches of the petroleum industry and to institute suits in equity in the United States district courts for the issuance of mandatory injunctions commanding any person to comply with the provisions of this act.

The power of the opposition to this bill would seem to give it almost no chance of passage.

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Senate Releases Voluminous 'Management Survey' Of USMC

In weighty volume which hinted broadly that the printed page was used to justify expenditures in making such a survey, the Senate released its "Management Survey of the U.S. Maritime Commission." The study was conducted by a subcommittee of the Senate Committee on Expenditures in the Executive Department of the Eightieth Congress. A brief summary of its contents follows:

This survey which was nine months in preparation and completed in December, 1948, covers virtually all of the responsibilities and operations of the Maritime Commission both in Washington and its field offices. Most of the report is devoted to very specific detail and is, therefore, not of great interest except in that the suggestions made in connection with the detail tend to improve the overall functioning of the Maritime Commission.

The management survey states the Maritime Commission has a multitude of responsibilities, some of which are more or less contradictory such as its promotion and regulation of shipping and its legislative and adjudicative functions.

The survey concludes that the Commission itself should be abolished. A separate independent Commission should be established to consider matters of a quasi-judicial and regulatory nature. The operation and promotional responsibilities of the present Commission should be the responsibility of an agency having complete authority and responsibility within the limits of legislative authority. Since the manner in which this latter agency is operated has a great affect on national economy, it should not be operated independently of the rest of the Executive Branch and except in times of war it should be a component preferably of the

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Department of Commerce. In this case its head would be responsible to the Secretary of Commerce, thereby giving assurance that its operations will conform with national policy. In time of war, this agency should automatically be transferred to the National Military Establishment.

The survey further criticises the current Commission organization as ill-suited for its operations and unduly restricted by the basic legislation under which it is organized.

The survey itself, however, and its recommendations, beyond those made at the very start, serve to reorganize all the current Maritime Commission functions in the same type of agency that now exists except for revamping of the details of the organizational chart.

The survey recommends the establishment of a general manager, reporting directly to the commissioner. Under the general manager, there would be established the seven following bureaus, each with various divisions and branches under them:

Management
Law
Engineering
Finance
Operations Government Aids
Maritime Services

The recommendations concerning each of the bureaus is very detailed. Some of the recommendations made were put into effect during the course of the survey, while others are in the process of being effectuated.

Purpose of the establishment of the general manager who was appointed in July was to delegate all administrative and operational authority and relieve the Commissioners from the mass of detail with which they were being burdened. All bureau heads report to the general manager who in turn reports directly to the commissioners.

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NFAS Long Range Program Submitted To Congress

After long delays the National Federation of American Shipping finally evolved and sent to Congress its revised long range program. The new program provides for the following:

Construction Differential—A provision to clarify the authority of the U.S. Maritime Commission to determine the construction differential subsidy for an American vessel on the basis of the estimated cost of building a ship of comparable capacity and utility in a foreign shipbuilding center, in order that true parity may be obtained between the building costs of the shipowners capital investment in foreign and American merchant ships. Also, authorizing the Maritime Commission to make adjustments in determining foreign costs of construction if it is of the opinion that such foreign costs are distorted by unrealistic rates of monetary exchange or by grants-in-aid, bounties or subsidies.

Reduction of Interest Rate—Reducing the interest rate paid by shipowners to the Government on payments for vessels built or bought, from 3½% to 2½% per annum to equal the cost or rate which Government pays for its borrowed money of similar character.

Mortgage Relief—Permit owners purchasing certain types of passenger vessels constructed with Government aid to sacrifice their investments in the vessels (minimum 25% down payments) by surrendering them to the Government, free of all liens, and in good condition, and be relieved of any liability for deficiency judgment.

Trade-In of Obsolete Vessels—To permit early beginning of replacement program, decrease eligibility age for trade-in purposes from 17 to 12 years, and establish fair values for traded-in ships.

Construction Reserve Fund—Clarify and liberalize construction reserve fund provisions to permit the use of such funds for reconstruction and reconditioning of merchant ships and grant extension of time for use of such deposits.

Accelerated Depreciation—Permit accelerated depreciation not in excess of one-fifth the cost of the vessel in any taxable year if applied against any existing government mortgage. Would also permit subsidized owners to increase deposits in the statutory capital reserve fund as depreciation charges on subsidized vessels, subject to a limitation prohibiting more than 20% of the cost of a vessel being deposited in any one year.

Other Legislation Needed

Panama Canal Tolls Study—A study by Congress of fiscal policies of the Panama Canal to recommend a toll schedule reflecting only actual costs of transiting commercial vessels through the Canal. (Such study is asked in H. Res. 44 introduced in the 81st Congress.)

U.S. Flag Ship Participation in Government Financed Cargoes—Provides that at least 50% of all commodities purchased with Government funds of all government-aid programs shall be transported on U.S. Flag vessels at market rates for such vessels. (Such legislation is already before Congress in H.R. 1340).

Foreign Discriminations—Legislation designed to correct present discriminations by many foreign nations against American ships; that would enable American ships entering foreign ports and competing for foreign commerce to receive the same treatment as that afforded foreign ships in United States ports.

Waterman Charges MC Subsidy Policy Is "Murderous Economic Weapon"

In a six page letter protesting the "flagrantly discriminatory" policy of the Maritime Commission on subsidy matters, Don Geaslin, vice president and general counsel of the Waterman Steamship Corporation, urged the Commission to terminate "unauthorized and discriminatory" policies which are "unduly prejudicial to non-subsidized steamship operators" and "detrimental to the American Merchant Marine."

Specifically, Mr. Geaslin protested a Commission policy of permitting subsidized steamship operators to establish service in competition with non-subsidized operators without the written consent of the Commission and "without regard to whether adequate service is already provided by the non-subsidized operator."

Mr. Geaslin, who was general counsel of the Maritime Commission in 1938-39, directed Vice Admiral Smith's attention to the fact that the Commission will not permit subsidized operators to establish services in competition with other subsidized operators, except with the written consent of the Commission, "presumably upon a proper showing that the additional service is needed to provide adequate service."

"In other words," Geaslin wrote, "the subsidized operators are by this device protected against competition with each other, but they are all free to establish services with non-subsidized vessels to compete with established bona-fide non-subsidized operators."

"Thus," the letter continued, "the benefits derived from the financial aid provided by law for the ostensible purpose of enabling operators of United States flag vessels to meet competition with foreign flag vessels are with official sanction used to place 'in the hands of the favored contractor a murderous economic weapon to be used against his American competitors.'"

The Waterman Corporation is a non-subsidized line which, since World War II, has purchased forty-five C-2 type vessels from the Commission. Prior to the war, it operated thirty-seven vessels.

Mr. Geaslin contended in his letter to Chairman Smith that the Commission policy is "contrary to, and destructive of, every purpose and intent of the Merchant Marine Act, 1936, as amended," since it "implies that a subsidized operator becomes entitled to special favors outside the law."

"Moreover, it would appear," Mr. Geaslin said, "that the policy has been evolved with such deliberation that, coupled with the progressive administrative nullification of Section 605(c) of the Act, it can hardly be regarded as anything less than a calculated disregard of the purposes of the law, the patent effect of which is to adversely affect the development of non-subsidized operations."

As one basis of his complaint, Mr. Geaslin cited the Commission's favorable

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WASHINGTON Roundup

action upon the application of the American President Lines for permission to establish a service with non-subsidized vessels between Atlantic Coast ports of the United States and the Far East via West Coast ports. Mr. Geaslin informed the Commission the proposed service was not only competitive with the services of two other subsidized lines, and with two non-subsidized lines, but it was competitive with American President's own subsidized service.

The Commission, "without writing an opinion stating the reasons or basis for its action as required by law," authorized the establishment of the service purportedly on a temporary basis, Mr. Geaslin said, "thus adding to an already adequate service."

He declared the examiners' report shows a hearing was held in the case "only because the proposed service was competitive with the applicant's own subsidized service and with the subsidized services of other operators."

"However," Mr. Geaslin said, "it is obvious that the whole purpose of the scheme was to enable that company to come to the Commission for an operating subsidy for the maintenance of such service after such period of operation which, under the Commission's interpretation of Section 605(c), will relieve it of the requirement of law to show that services by other United States flag operators are inadequate. This action of the Commission is all the more objectionable because the operation of American President Lines is in fact a government-owned operation."

Mr. Geaslin declared "numerous other cases" could be cited where the Commission has acted similarly to the disadvantage of the non-subsidized operators.

The Waterman official concluded his letter thus:

"It is respectfully requested that appropriate action be taken by the Commission to remove the discrimination complained of and that all services established by subsidized operators, pursuant to such discriminatory policy since the cessation of hostilities shall be terminated forthwith and the Commission proceed thereafter in the establishment of new services by subsidized operators in accordance with the requirements of the law."

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USMC Makes Key Personnel Shifts

Several changes among its key personnel have been announced by the U.S. Maritime Commission.

F. M. "Mike" Darr, chief of the division of traffic since 1938, retired on February 28 and was succeeded by Charles H. McGuire, formerly assistant chief. Mr. Darr entered the employ of the former U.S. Shipping Board in June, 1919, after World War I service in the Army. Prior to his military service he had been employed by the Southern Railway in Washington. He retires after 30 years of Government service and expects to enter the shipping business with headquarters in Washington.

Mr. McGuire was employed by the former Shipping Board on finishing school in 1918. At the end of 1929 he joined United States Lines Operations, Inc., remaining with the company until 1942 through its absorption by the International Mercantile Marine Company and its reorganization as United States Lines. He then returned to the Government service in the War Shipping Administration, Division of Freight Rates, of which he became assistant director.

C. H. Lundegaard has resigned his position as vice president of the Aetna Marine Corporation to receive appointment as chief of the Maritime Commission's division of maintenance and repair under Captain J. L. McGuigan, chief of the bureau of engineering. He succeeds Daniel S. Brierley, who has been appointed chief of vessel trial and guarantee survey boards. In this capacity Mr. Brierley will handle part of the functions of the former division of inspection and performance, which was headed by Captain Abram Claude. Captain Claude is now chief of the division of inspection.

Mr. Lundegaard, who came to the United States from Denmark in 1920, was employed by the Maritime Commission from 1938 to 1945 when he resigned to join the Aetna Marine Corporation. In those years he served as an assistant regional director of construction and regional director of the Commission. While with Aetna he did much to expedite completion of the two passenger liners built by the Bethlehem Steel Company at Alameda, California, for American President Lines.

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Luckenbach Awards Contracts For Conversions

Luckenbach Steamship Company announces Willamette Iron and Steel Co. has been awarded the contract for converting the ss SEA BARB and the Seattle yard of Todd Shipyards Corp. the contract for similar work on the ss SEA RUNNER.

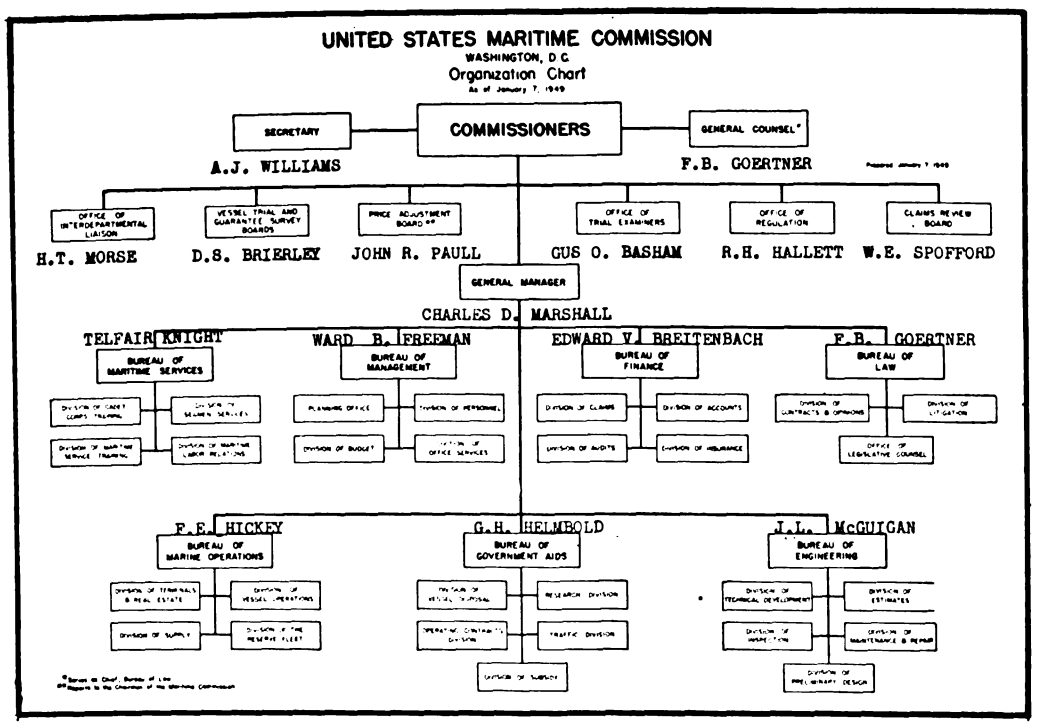
Consolidated Builders, Portland, Oregon, get the main contract on the ss SEA CAT with the Moore Dock Co., Oakland, doing the dry-docking and the underwater work. The Moore yard was awarded the entire work on the ss SEA DEVIL and SEA BASS.

Commercial Ship Repair, San Francisco, prepared the SEA BARB, SEA RUNNER and SEA CAT for the tow from San Francisco Bay to the Pacific Northwest yards. Red Stack tugs towed the SEA BARB and the SEA CAT to Portland the Foss tugs handled the SEA RUNNER to Seattle. Two Mikimiki tugs were assigned to each ship.

In all, Luckenbach is converting eight of these C-3s at a cost of approximately $6,000,000. Earlier it was announced that the Todd Shipyards Corp. yard at Seattle had been awarded the SEA STAR and the SEA FLYER. Maryland Dry Dock at Baltimore is converting the ss LAMAR.

From 90 to 100 days will be required to complete the work on each ship in the Pacific Coast yards, which will put the ss SEA STAR and SEA FLYER in commission in May, with the others following throughout the summer. Each will be given a name of a member of the Luckenbach family.

Present organizational makeup of the Maritime Commission.



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SS OLYMPIC GAMES

SUPERTANKER BY BETHLEHEM

Details of 18,000-ton tanker, first of four building at Bethlehem Sparrows Point yard.

Recently delivered by Bethlehem Steel Company's Sparrows Point Shipyard to the Olympic Oil Lines, the ss OLYMPIC GAMES is an outstanding example of the current trend in tanker construction in the United States, combining large volumetric cargo capacity and deadweight with an attractive appearance.

The first of four 18,000-ton deadweight tankers on order at the Sparrows Point Yard to be completed, the OLYMPIC GAMES went into service late last November with a maiden voyage to Aruba and Dakar.

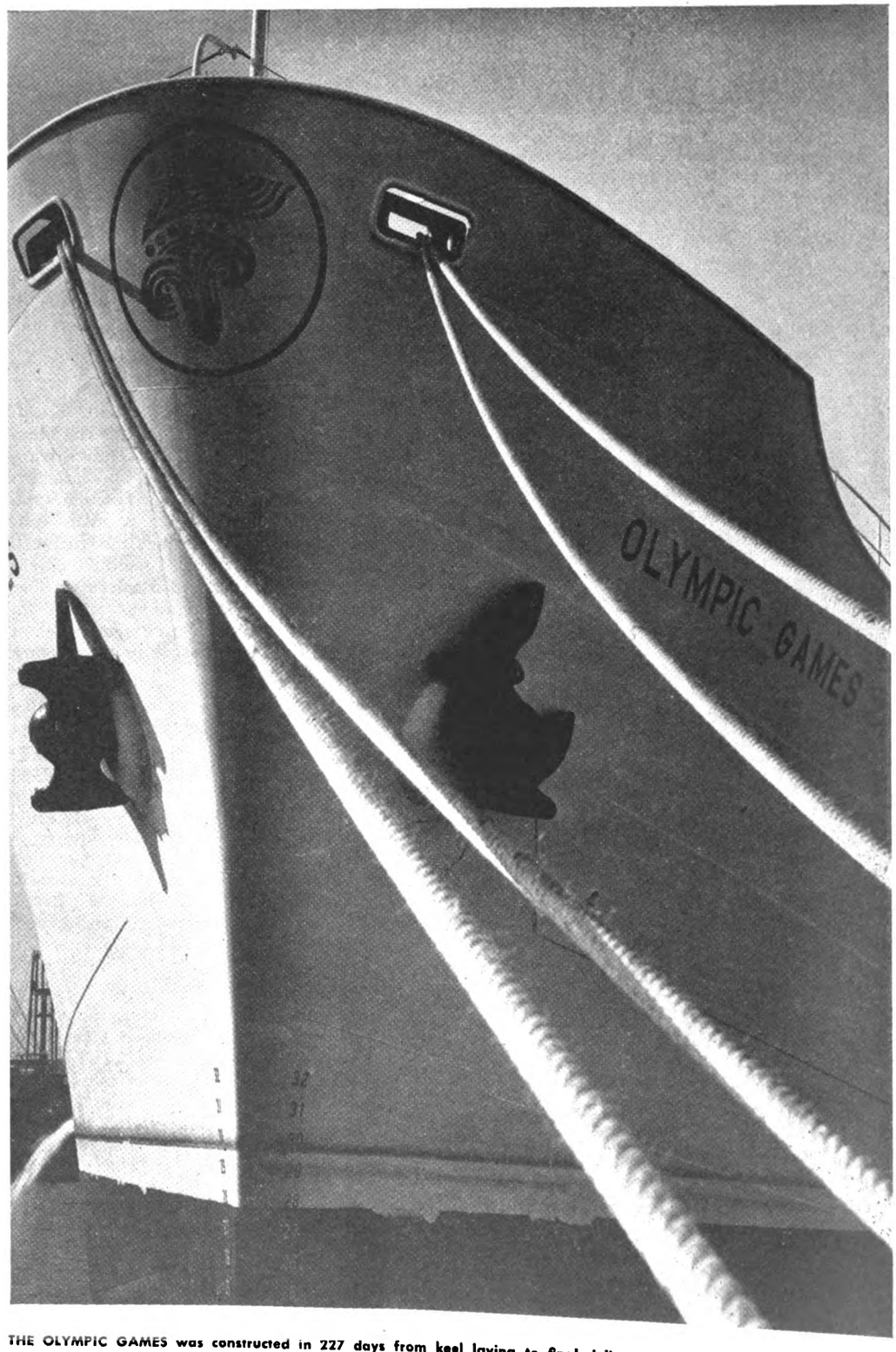
Designed by Bethlehem in cooperation with her owners, the vessel was delivered November 18, 1948. Her keel was laid April 5 of that year, she was launched on August 27 and she successfully completed her sea trials, attaining a speed in excess of 15 knots, on November 16. Delivery of the vessel only 227 days after keel laying was considered excellent for peacetime construction of the first ship of a new series.

Principal Characteristics

Designed according to the customary arrangement for modern oil carriers, the OLYMPIC GAMES is a three-island, single-screw, turbine-driven tanker with machinery and crew's quarters aft and deck officers' accommodations and navigation spaces in a midship deck house. Her principal characteristics follow:

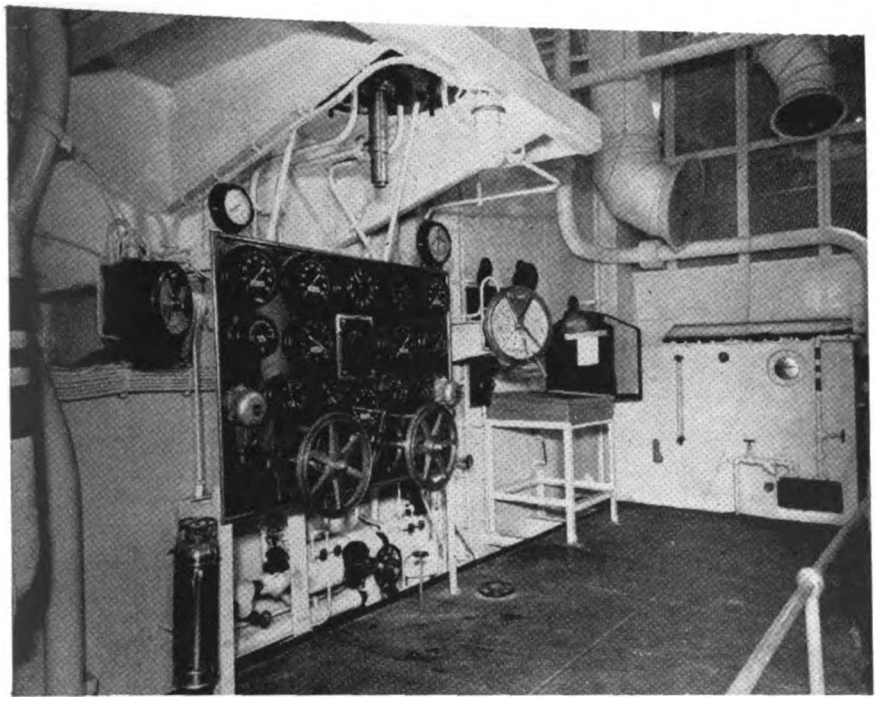
Overall length	551′-2″
Length between perpendiculars	524′-0″
Breadth, molded	68′-0″
Depth, molded	37′-6″
Draft to assigned summer load line	29′-9½″
Deadweight	18,151 tons
Cargo capacity	152,208 BBLS.
Bunker capacity	4,814 BBLS.
Shaft horsepower, max.	6050
Propeller speed, max.	103 rpm
Speed at draft load	15 knots
Total complement	44

The cargo space is divided into 27 compartments, the full depth of the hull, by oil-tight bulkheads extending from the bottom shell to the upper deck, 10 transverse and two longitudinal. The latter are continuous, running from the forward cofferdam to the after end of the fuel tanks, with deep brackets beneath the upper deck in dry cargo spaces forward and beneath the upper deck aft. A double bottom with water-tight tank top in the machinery space is sub-divided for reserve feed and wash water, drain well,

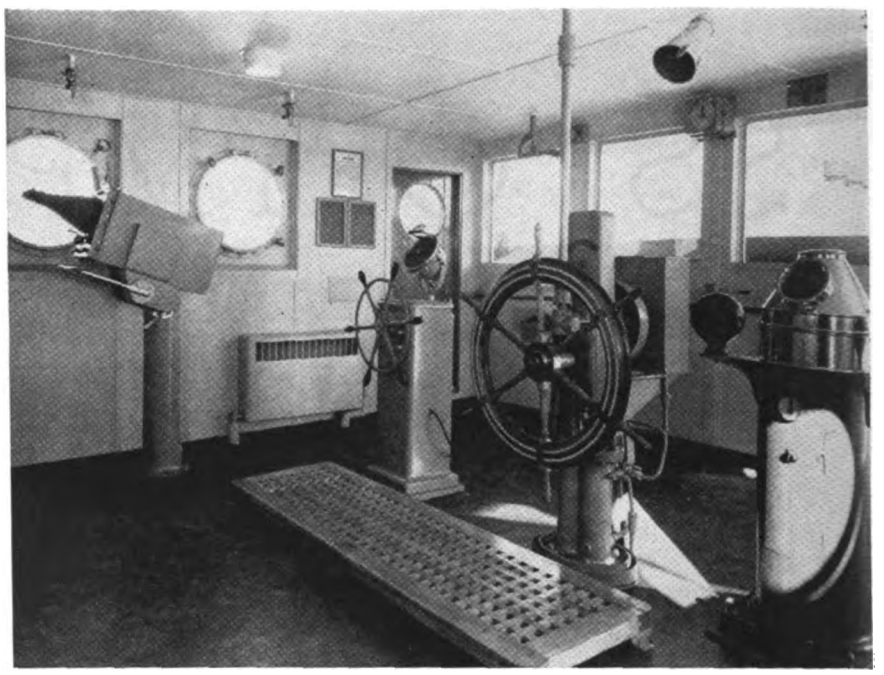


THE OLYMPIC GAMES was constructed in 227 days from keel laying to final delivery.

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INSTRUMENT PANEL is typical of the neat machinery arrangement. Main propulsion equipment consists of one high-pressure and one low-pressure Westinghouse turbines and two Foster-Wheeler single pass, cross-drum, straight tube boilers.



PILOT HOUSE of the new supertanker has Sperry Gyrocompass and automatic pilot and Raytheon Pathfinder radar. In addition to this the ship is equipped with Submarine Signal Co. fathometer, electric sounding machine, electric revolution and rudder angle indicators, and a three-day course recorder.

lube-oil sump and fathometer sump. The fore and aft peaks are used for ballast only.

Ballast or emergency long-voyage fuel oil is carried in the fore deep tank. Dry cargo is carried in the 'tween deck space above, which is served by an 11′-3″ x 14′-9″ hatch with steel cover, on the upper deck. The raised forecastle houses the carpenter shop, lamp room, paint and oil room, and boatswain's stores.

The stem is of rolled plate construction with welded plate breast hooks. The stern frame is cast steel and is made up in sections. The rudder is of the streamlined, partially balanced, double-plate type, with forged stock and rolled-steel trunk. All of these units were built by Bethlehem.

Longitudinal framing is used for the hull, with equal spacing of transverses, and with heavy flat plate connections on all longitudinals at transverse bulkheads. The shell longitudinals of the bottom, side shell and decks are inverted angle sections graduated in size as required. Transverse and longitudinal framing of conventional design is used in the peaks and at both ends of the vessel, forward and aft of the cargo tanks.

Bethlehem-Frear Bulkheads

To save weight and afford ease of fabrication all bulkheads are of the Bethlehem-Frear fluted type. These have sufficient stiffness to permit the elimination of all bulkhead stiffeners except the simple plate webs across the fluting.

Welding has been used extensively throughout the vessel, with riveting confined almost entirely to the seams of the side shell plating and to four seams of the upper deck plating. All deck houses and enclosures are of welded construction.

The upper deck, poop, bridge, forecastle decks are framed longitudinally, while transverse framing is used in the upper bridge deck, navigation bridge and after house top. The deck over the cargo oil tanks has double riveted seams with welded butts.

The main propulsion machinery consists of one high-pressure and one low-pressure Westinghouse turbine, driving a four-blade, solid bronze propeller of 19 ft. 3 in. diameter through double-reduction gears. This unit has a normal ahead rating of 5500 shaft horsepower at 100 rpm. Steam is supplied to the throttle at 440 lbs. pressure and 740° F, with 28½ in. vacuum at the exhaust flange. The high-pressure turbine is of the combined impulse-reaction type; the low-pressure turbine of the single-flow reaction type, exhausting downward to a main condenser athwartship below the turbines. Either turbine may be operated single, in case of emergency. An astern turbine, capable of providing ample torque for stopping and maneuvering the vessel, is fitted in the low-pressure turbine casing.

Two Foster-Wheeler single pass, cross-drum, straight-tube boilers are located on a flat in the machinery space above and aft of the turbines. They are fired with oil burners operating under forced draft from two blowers, each with a capacity of 11,500 cu. ft. per min. at a static head of 10 in. of water. One blower is sufficient for normal full-power operation of the ship. Economizers are located in the uptakes from each boiler just below the smokestack. Steam-jet soot blowers are provided for both the economizers and the boilers.

Each boiler has 4215 sq. ft. of heating surface, including water walls; the superheater has 687 sq. ft. and each economizer 1438 sq. ft. of heating surface. The boilers are designed for 465 lbs. working pressure and 750° F. at the superheater outlet. Normal rated capacity of the boiler is 27,500 lbs. of steam per hour, which is in excess of full power requirements and sufficient to permit supplying the tank-cleaning system at cruising speed. Maximum rated capacity is 41,250 lbs. of steam per hr. at 465 lbs. pressure and 775° F. at superheater outlet. The superheater has a normal capacity of 25,000 lbs. of steam per hour, the desuperheater 2500 lbs.

In addition to the desuperheaters in the boiler drums, there is an external desuperheater for supplying deck steam and steam to the salt-water heater for cargo-tank cleaning. This external desuperheater will maintain 250-lbs. pressure and 480° F. when supplied with 30,000 lbs. per hour of 465 lbs. superheated steam at 750° F, and about 4280 lbs. per hour of fresh water at 525 lbs. and 240° F.

Main Turbines

Superheated steam, at full boiler pressure, is supplied to the main turbines and the two Westinghouse 300-kw generator turbines, and desuperheated steam, also at full boiler pressure, to the J. S. Coffin Co. main feed-pump turbines, Worthington fire and butterworth-pump turbine, and the reciprocating auxiliary feed pump. The main-turbine throttle valve is equipped with a water-spray nozzle for reducing the temperature of the steam for prolonged astern operation and for emergency operation of the low-pressure turbine when the high-pressure unit is out of service.

The Hagan combustion-control system automatically regulates the fuel and air supply to the steam generators to meet the fluctuations in the steam demand. One motor-driven air compressor and one compressed-air tank supply air to this combustion control, with emergency supply connection from the ship's service compressed air system. Either compressor has sufficient capacity to operate the system.

At sea, the Westinghouse main condenser handles main-turbine and generator exhaust, while the auxiliary condenser is normally secured. In port, the auxiliary condenser receives exhaust from the generator turbines, excess auxiliary exhaust, and exhaust from the deck machinery and pump rooms. The main-cargo pump turbines are so arranged that they can exhaust into either the main or the auxiliary condenser. Motor-driven centrifugal pumps supply circulating water for the main and auxiliary con-

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densers while the main circulating pump serves the lubricating-oil coolers. In case of failure of the condenser circulating pumps, the fire and butterworth pump supplies circulating water for the auxiliary condenser and lubricating-oil coolers. A twin-type, two-stage air ejector serves the main condenser and a unit with two single-stage jets the auxiliary condenser.

Feed System

The feed system is completely enclosed, insuring absolute deaeration of the boiler feed water. Each condenser is furnished with a vertical motor-driven centrifugal condensate pump. A standby pump of the same capacity as the main condensate pump may be used on either condenser in an emergency. The condensate pumps discharge through the air ejector inter and after condensers, gland exhauster condenser to the deaerating feed-water heater. A by-pass is provided around the deaerating feed-water heater.

Fuel Oil Pumps

Two Worthington horizontal, motor-driven fuel-oil service pumps, one steam reciprocating fuel-oil service and transfer pump, and one steam reciprocating fuel-oil transfer pump are available in the machinery space. Suitable strainers, heaters, control valves, meters, recirculating lines, etc., are provided in the discharge to the burners. Two storage tanks and two settling tanks are located just forward of the machinery space and two fuel-oil or ballast tanks forward.

Lubricating oil is supplied to the main reduction gears via combined gravity and settling tanks. One motor-driven rotary service pump and one steam reciprocating stand-by pump are available. These pumps draw oil from the reduction-gear sump tank and discharge to the gravity and settling tanks via two lube-oil coolers arranged in parallel, each with sufficient cooling surface to serve the vessel at full power. A power oil-supply line to the main throttle valve shuts down the main turbines in event of failure of the lubricating-oil system. One Sharples lube-oil purifier, of 350-gal. per hr. capacity, is provided. Continuous purification of the oil in sump tank or batch purification of oil in the gravity and settling tanks is possible by discharge to either of two 1000-gal. storage tanks installed in the engine casing. A hand pump is also available for drawing samples of oil from the l.o. sump tank.

Cargo Oil System

The cargo-oil pump room is fitted with natural ventilation via 2-24" cowl vents, and an exhaust from the bilges by a motor-operated blower. The forward pump room is also equipped for natural ventilation. In addition, a steam-jet exhauster with ducts leading to the bilges is used to exhaust accumulated gases.

The cargo-oil system consists of nine main centerline tanks and nine wing tanks on port and starboard. In the pump room aft are two 2800 g.p.m. motor driven cargo pumps, and two 1000 g.p.m. vert. reciprocating steam stripping pumps. One of the stripping pumps is arranged to handle the cargo pump room bilge as well as cofferdam bilge suctions.

The pumps are connected to the tanks in groups, each pump having its own discharge and filling line, thus permitting the handling of various grades of oils without contamination. Athwartship loading and discharge headers are on the upper deck, midship. Provisions are made for ballasting the tanks with salt water.

The cargo system is designed for carrying petroleum products in bulk with flash point below 150° F. All tank hatches are vented via pressure-vacuum relief valves and the vents, arranged in three groups, terminating well up the masts or kingposts with flame arresters near the open ends. Deck sprinkling provisions are made to meet the Panama Canal requirements.

All fuel-oil tanks and cargo-oil tanks are fitted with heating coils. The steam drains from the tank-heating coils as well as other drains aft, which may become contaminated, are led to an inspection tank in the machinery space. A drain pump takes suction from this tank and discharges clean drains to the deaerating feed-water heater while contaminated drains are let to bilge. The inspection tank is fitted with a sight glass, cooling coil and float regulator for controlling the operation of the drain pump.

Other miscellaneous machinery-space drains are led to a 150-gal. F.W. drain collecting tank from which the main and auxiliary condensers take suction by way of a float control valve. This drain tank has also an emergency drain to the inner bottom reserve feed tanks as well as a drain to bilge.

The main-turbine and turbo-generator glands are sealed with low-pressure auxiliary steam and exhaust to a gland-exhauster condenser, vapors from which are carried off by a steam-jet ejector.

Lifting pads and chain hoists are provided over the auxiliary machinery units to facilitate repairs, and an 8-ton crane is furnished for lifting parts of the main turbines and reduction gears.

Navigation Equipment

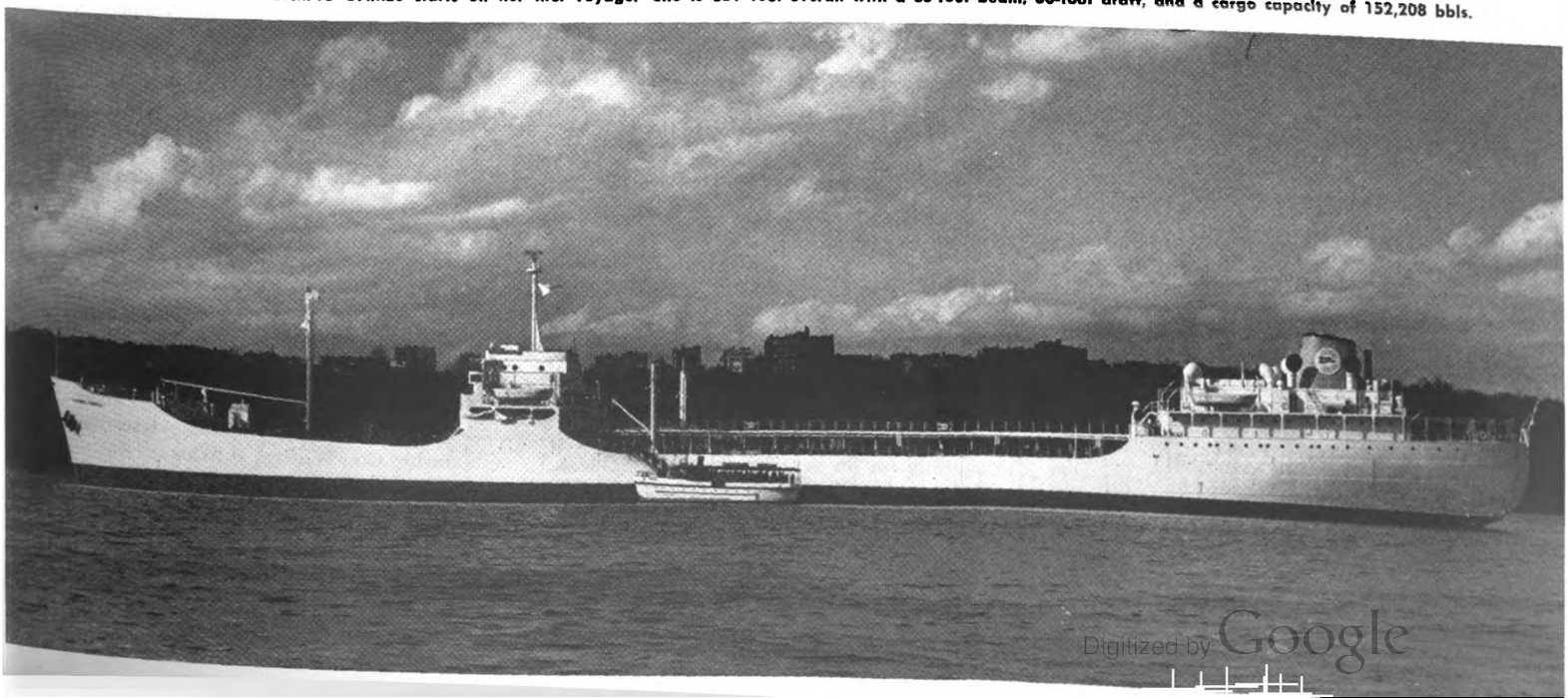
The navigation equipment consists of a Sperry gyro compass with two repeaters, in addition to the ordinary Kelvin & White standard compass. The vessel is also equipped with Sperry gyro-pilot automatic steering control, Submarine Signal Co. fathometer, and electric sounding machine. Electric revolution and rudder angle indicators and a continuous three-day course recorder are located in the wheel house.

Engine and docking telegraphs are of the conventional mechanical type. One alarm system indicates failure of lube oil supply and another indicates burning out of running lights. Included in the console type radio communication equipment are short-wave and intermediate frequency transmitters, a smaller emergency transmitter, a main and emergency receiver of low and intermediate frequencies, a communication receiver of intermediate and high frequencies, and a crystal receiver; also a radio direction finder and automatic S.O.S. receivers. The vessel is also equipped with Raytheon Pathfinder radar.

The American Engineering Co. steering

(Continued on Page 56)

DAKAR BOUND the SS OLYMPIC GAMES starts on her first voyage. She is 551 feet overall with a 68-foot beam, 30-foot draft, and a cargo capacity of 152,208 bbls.



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West Coast Wears "New Look" In Management-Labor Relations

Pacific Coast waterfront employers and waterfront unions have launched a "new look" program to eliminate barriers which have kept them apart and to work together for their mutual good and for the good of shipping, labor and trade and commerce in the port cities of the West Coast.

As a part of this program, more than 60 representatives of the Waterfront Employers Association of the Pacific Coast and the International Longshoremen's and Warehousemen's Union sat down in March in San Francisco at a two-day conference in a friendly atmosphere, previously alien, to devise ways and means to increase shipping, to win back cargo movements lost during the recent 95-day maritime strike and to work for more jobs for ship and dock workers.

Presiding at this conference, at the request of both sides, was Kenneth H. Finnesey, San Francisco manager for the States Steamship Co., who declared, after the sessions, that the employers and the union representatives found "many areas of mutual interest in which we can work jointly to translate these areas into shipping and more ship and dock jobs."

"We can conservatively say that for each dollar rung up in a cash register in any American port city, at least 30 cents comes directly from our waterborne commerce," Mr. Finnesey said, "Our program will mean more jobs for others, too."

Four major committees will continue the work of the conference and shape the program's details.

PACIFIC MARITIME ASSOCIATION nominates O. W. PEARSON, Executive Vice President of the Marine Terminals Corporation, President of the new Association.



Pope & Talbot Lines have offered the use of their private plane to representatives of the committee to fly around the country on their mission to induce shippers to again ship through West Coast ports.

Almost simultaneously with this employer-union conference came the announcement the directors of the Pacific American Shipowners Association and the Waterfront Employers Association dissolved these two and formed a new group, the Pacific Maritime Association, to take over the functions of both and to be headed by executive personnel tempered to work with the "new look" program.

O. W. Pearson, Los Angeles, executive vice president of the Marine Terminals Corporation, was elected president. The directors recommended the retention of Frank Foise, president of the WEA, and J. B. Bryant, president of the PASA, with the new association on an advisory basis. H. W. Clark, vice president of the WEA, heads the longshore section of the new body.

Under the proposed plan, the directors of the new association will include representation from all segments of the industry and will include participation of foreign lines on longshore matters. The consolidation was tentatively set for April 1. Membership in both associations totals about 150 companies.

Reorganization of the PSA and WEA has been under consideration since the conclusion of the strike, as many shipowners felt neither of the old organizations could meet the needs of the "new look" cooperative labor policies. The two bodies have handled the negotiation and administration of the seven maritime labor agreements which shipowners have with dock and shipboard workers.

Marine Association of Commerce of Los Angeles-Long Beach harbor has launched a protest against a ruling by the Post Office Department which diverts eastern mail shipments to Australia and New Zealand from Pacific Coast to Atlantic Coast ports at an estimated annual loss of approximately $240,000 in freight revenues to West Coast shipping companies. Marine circles believe this switch is a result of the recent strike which paralyzed Pacific Coast shipping 95 days.

The Southern California association wrote Ralph J. Chandler, Los Angeles, vice president of the Matson Navigation Co., the principal loser, offering its help in any action Matson may take to combat the order. Before the strike, Matson carried between 7,000 and 8,000 bags of mail monthly for an average charge of $15,000. Another loser was the Pacific-Australia Direct line, a Swedish company for which General Steamship Co. is agent.

Scheduled Plans for Spring Meeting of Naval Architects

George L. Crow, marine manager, General Electric Co., San Francisco, has replaced Joseph A. Moore, Jr., Moore Dry Dock Company, Oakland, as chairman of the West Coast steering committee in charge of arrangements for the 1949 Spring Meeting of The Society of Naval Architects and Marine Engineers to be held at San Francisco, May 12 and 13. Mr. Moore was advised by his doctor to give up the post.

This will be the first time the Naval Architects' society ever has held a national meeting on the Pacific Coast and great plans for a successful gathering are being made by the three coast sections, who are the hosts.

A large delegation from east of the Rockies is expected to journey to the meeting on a special train and, after the convention, will spend two days in Southern California as guests of the Section members there.

J. B. Woodward, Jr., Newport News Shipbuilding and Dry Dock Co., national president of the Society, will preside at the technical session, which will open the meeting on May 12 at the Palace Hotel.

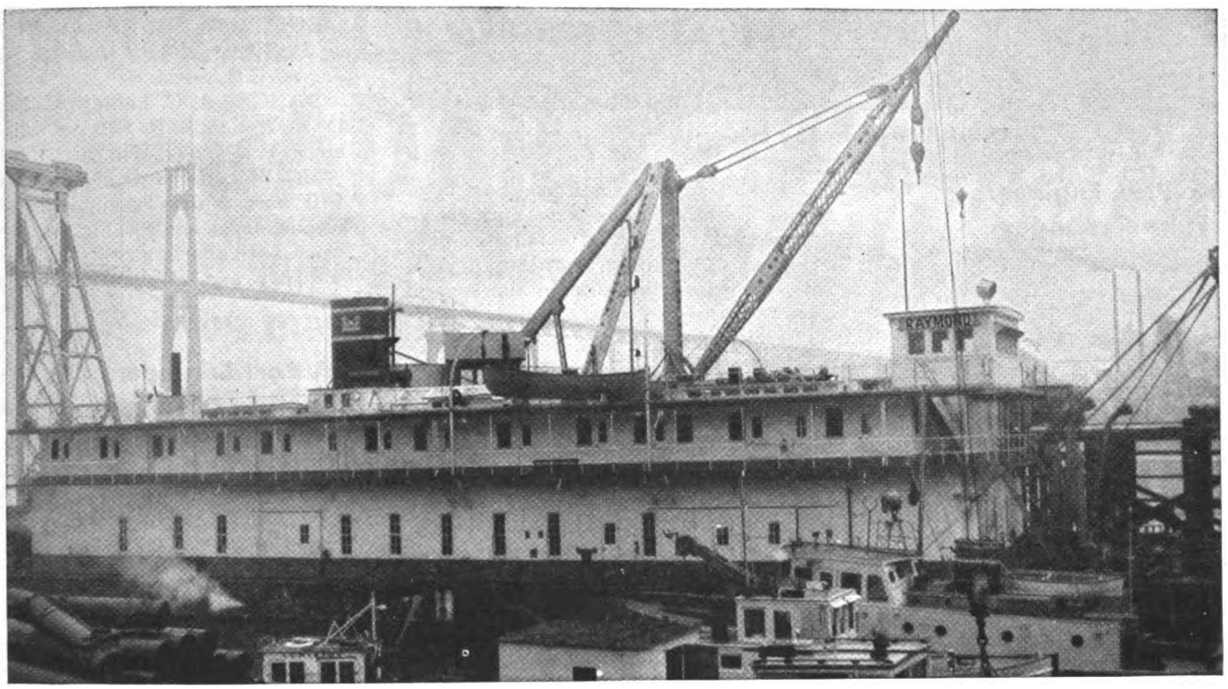
Mr. Crow's committee has an elaborate entertainment program arranged for the visiting members and their wives. On Thursday afternoon they have the choice of a trip through the Radiation (Cyclotron) Laboratory of the University of California at Berkeley or a tour of San Francisco Bay on a United States Navy destroyer. Friday the delegates will tour the San Francisco Naval Shipyard, one of the newest of the Navy's shipyards and the home of the world's largest crane.

Social events include a reception and informal banquet Thursday evening at the Palace Hotel and a golf tournament for the men at the Meadow Club in Marin County Friday followed by a dinner there. In the course of the planned trips, delegates will be driven across both the Golden Gate and the San Francisco-Oakland Bay Bridges.

Sub-chairmen on Mr. Crow's committee are: finance, William A. Baker, Bethlehem Steel Co.; publicity, Thomas A. Short, T. A. Short Co.; technical program, Herman Thal-Larsen, Bethlehem; hotel and registration, Charles G. Cox, Nordberg Manufacturing Co.; reception and banquet, Edward J. Schneider, Moore Dry Dock; inspection trips and transportation, Fred W. Short, Todd Shipyards Co.; golf and dinner, W. Edgar Martin, American Pipe & Construction Co. and ladies hospitality committee, Mrs. Thomas A. Short.

On the steering committee itself are Harold P. Champlain, United Fruit Co.; Captain Wallace R. Dowd, USN; Karl French, San Pedro naval architect; Captain Hugh E. Haven, USN; Tom C. Ingersoll, Bethlehem; Phillip Lemler, Todd; Thomas G. Plant, American-Hawaiian Steamship Co.; William B. Warren, American Bureau of Shipping and William H. Watkins, Puget Sound Navy Yard, Bremerton, Wn.

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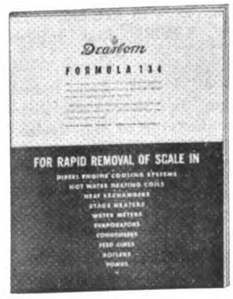
DEARBORN FORMULA 134 *Dislodges Scale*

In Cooling System Pipes that were almost closed

From the U. S. Engineers' dredge "Raymond," on the West Coast, comes report of the excellent performance of Dearborn Formula 134 in removing a wall of scale from the cooling system on its three Diesels.

When the treatment was first introduced into the system, scale-clogged pipes were almost closed. After circulation of treatment for several hours, scale disintegrated, the system was washed out, refilled . . . for unhampered operation.

The Formula's use on Diesels is but one phase of the complete water treatment service offered by Dearborn in the marine field. Dearborn Service is world-wide. There's a Dearborn Engineer at hand to serve you.



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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

New York Port Engineers Try Out Tube Expander

Everybody had a chance to become an expert tube expander at the February 16th dinner meeting of The Society of Marine Port Engineers New York, N.Y., for Dr. Frank E. Dudley set up his electronic control unit for the precision expansion of heat exchanger tubes and invited members and guests to try it out. Present at the demonstration were a number of Crane Packing Co. men whose company is the sole distributor of the new tool in the Western Hemisphere.

Developed by Dr. Dudley for the Navy, the use of the electronic tube control is now being specified on heat exchanger repair work aboard naval vessels. Available but a comparatively short time to commercial vessel repair yards and steamship operators its use is being written into repair specifications by a number of companies, including several tanker operators.

At present, Dr. Dudley told the meeting, three types of controls are available. The Type "A-s" for precision expanding of tubes from ¼ through ½-inch in diameter; the Type "A" for ½ through 1-inch diameter tubes; and, the Type "H" for expanding the heavier gauge tubes up to and including 1¼-inch BWG steel tubes. Shortly a Dudley Control will be available for 2-inch boiler tubes, and currently Dr. Dudley is developing a unit to expand 4-inch tubes.

President F. W. Gaines, The Society of Marine Port Engineers New York, N.Y., Inc., recently announced committee personnel to serve during the current year. The men who will work on the several committees are:

LEGISLATIVE. G. L. Bennett, chairman; W. A. Dunbar, vice chairman; W. F. Jones, honorary chairman; H. Scott, E. J. Tracy, B. W. Lockett, K. F. Murchinson, J. V. Mulcahy.

TECHNICAL. T. A. McQuilling, chairman; I. D. Eby, vice chairman; B. W. Meurk, honorary chairman; T. J. McTaggart, chairman tankers sub committee; H. S. Cable, chairman cargo sub committee; E. W. Calmer, chairman passenger subcommittee; Perry Sisler, A. C. Lanteri, J. P. Tierney, C. W. Clarke, M. C. Doyle, Wm. F. Nichols, R. R. Bailey, W. E. Keller.

INDUSTRY AND PUBLIC RELATIONS. B. C. Edwards, chairman; Harlan Scott, vice chairman; W. B. Jupp, honorary chairman; H. S. Cable, D. H. Waller, S. Roma, C. H. Roe, E. Timmons.

PROGRAM. O. H. Waller, chairman; Chas. Woodall, vice chairman; C. J. Reilly, E. N. Fabares, Robert Cavell, Jr., R. E. Clark, J. A. Lazzaro, D. Laing, Jr.

HOUSE. J. P. Tierney, chairman; J. S. Jackson, vice chairman; G. W. Mikkelsen, C. J. Pierce, A. DeRobbio, T. Lane, E. Stetter, A. C. Lanteri.

WELFARE. W. F. May, chairman; A. C. Linne, vice chairman, H. W. Mikkelsen, J. W. McDiarmid, R. S. Saltsman, J. J. Murphy, L. F. Henshaw, Chas. Anderson.

BULLETIN. H. Scott, C. N. Guckert, J. P. Tierney, Wm. Richards, D. Laing, Jr., A. C. Lanteri.

DANCE. A. C. Lanteri, C. N. Guckert, D. H. Waller, E. N. Fabares, Chas. Woodall, J. P. Tierney, Wm. Richards.

Mr. Wm. Richards, secretary-treasurer will work with all committees. Mr. E. J. Keane, legal adviser for the society will work with the Legislative, Technical and Industry and Public Relations Committees.

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AT THE FEBRUARY DINNER MEETING, The Society of Marine Port Engineers New York, N.Y., Inc., witnessed a demonstration of the Dudley Electronic Control for precision expansion of heat exchanger and boiler tubes. Checking the simplicity of operating this new tool is COMDR. A. W. DENIKE, Asst. Industrial Manager, Brooklyn Navy Yard.

From left to right, D. CORMACK, Civilian Navy Inspector and Lt. C. N. STOUT, Asst. Industrial Manager, Brooklyn Navy Yard; ALBERT W. JAEGER, Marine Sales, Crane Packing Co., New York, distributors of the Dudley Electronic Control; DR. FRANK E. DUDLEY, inventor and manufacturer of the device, Philadelphia; J. R. MORTON, New York Manager, Crane Packing Co. and NEWELL BRACKETT, Vice President, Crane Packing Co., Bala-Cynwyd, Pa.

J. E. CALLAHAN, extreme right, of the Westinghouse Micarta Works, talking on laminated plastic marine bearings at the March meeting of the San Francisco port engineers' society.



LA Port Engineers Changes Meeting Date

The Society of Port Engineers, Los Angeles, has changed its meeting date from the first Wednesday to the first Thursday night of each month and its meeting place from the Hotel Lafayette, Long Beach, to the Bilge Club quarters at the Persian Room Restaurant, Wilmington.

In April the Hagan Corporation is to present a program, arranged by Ray L. Sullivan, Southern California district manager for that firm.

The Texas Company is scheduled for the May meeting, with Donald Mackay, marine sales representative for the Los Angeles harbor area, in charge.

For June the Crane Company will present a motion picture showing how valves are manufactured. F. R. Perry, assistant manager of Crane's Los Angeles office, has arranged for his presentation.

Thomas E. Rhodes of Slick Airways, Los Angeles, will show motion pictures at the March meeting to let the port engineers know how air freight is handled. Mr. Rhodes formerly was Southern California representative of The LOG.

Bert Hale of Marine Solvents Service Corporation, Wilmington, who is secretary of the Los Angeles port engineers' group and also new secretary of the Southern California Section of The Society of Naval Architects and Marine Engineers, has been named secretary of the Technical Societies Council of Southern California. This organization is made up of seventeen technical societies in that area.

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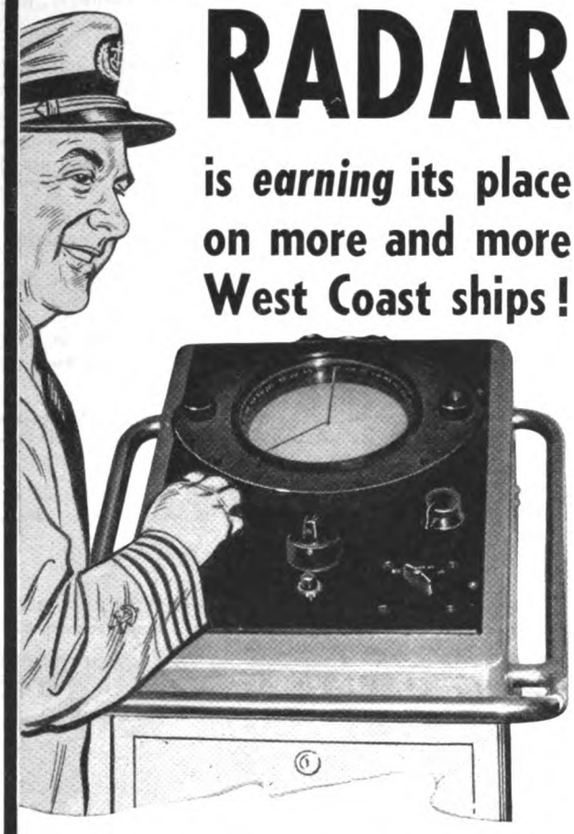
Future Scheduled Programs For San Francisco Engineers

"Dynamic Balancing of Rotating Parts" will be the subject of a talk at the April meeting of The Society of Port Engineers, San Francisco, by Jack E. Crose, engineering representative of the San Francisco office of the Gisholt Machine Co., Madison, Wisconsin, said to be largest builders of balancing machines in the world and one of the largest manufacturers of machine tools. Mr. Crose will illustrate his talk with slides and test equipment prepared by the Dahl-Beck Electric Co.

At the May meeting of the San Francisco Society, the Harbor Supply Co., marine distributors for the Fulton Sylphon

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is *earning* its place on more and more West Coast ships!

Top performance and easy installation made it the choice on ships like these:

AMERICAN PRESIDENT LINES
"President Cleveland," "President Wilson"
BAY & RIVER NAVIGATION "Komoku"
CALIF. FISH & GAME "Albacore"
COASTAL OIL COMPANY "Rosina Marron"
HILLCONE STEAMSHIP CO "Trinity," "Salinas"
OCEAN TOW, INC. Eight tugs
PACIFIC FAR EAST LINES
"China Bear," "Pacific Bear"
"Contest," "Flying Scud"
POPE & TALBOT, INC. "Seafarer"

The "perfected performance" you get with a G-E Electronic Navigator is only one of the factors that makes it tops with West Coast shippers. It's simplest of all to install—simpler to operate—and simpler to maintain. Ets-Hokin & Galvan will be glad to give you the facts—and a demonstration!

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THE SOCIETY OF PORT ENGINEERS

Division of the Robert Shaw-Fulton Controls Co. will present a talking motion picture titled "The Manufacture of Metal Bellows and Temperature Regulators." Present to answer questions will be Norman Brown and Thomas C. Brewer of the Norman Brown Company, manufacturers representative at San Francisco for the Fulton-Sylphon firm.

A large crowd of more than 60 attended the March meeting of the San Francisco Society to hear J. E. Callahan, manager of the Westinghouse Electric Corporation Micarta Works at Trafford, Pennsylvania, talk on "Laminated Plastic Marine Bearings." The speaker traced the development of the Micarta bearing, discussed probable causes of trouble and demonstrated its assembly and design features.

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Opposed Piston Diesels is Topic at Northwest Meetings

At Portland, in February, Howard Oxsen, district manager, Fairbanks, Morse and Company, with the use of slides discussed the opposed piston Diesel engine with members of the Society of Port Engineers, Columbia River Area.

The program was repeated in March at Seattle before the Society of Port Engineers of Puget Sound with Tom Bullock, Seattle branch manager, assisting in the discussion.

Details of construction and operation of the engine were explained. Planned as an engine to provide the economy and reliability of the slow speed engine while at the same time eliminating massive construction key advantages of the design were stated as:

(1) The absence of cylinder head

(Continued on Page 53)

COLUMBIA RIVER PORT ENGINEERS . . . Top row, left to right: JAMES E. SAVISKI, U. S. Maritime Commission, club president; HOWARD OXSEN, W. J. McINTOSH, RICHARD KERN, Fairbanks Morse and Company, program sponsors; D. M. GIBSON, D. M. Gibson Company; MORRIS HANSEN, Mar-Dustrial Sales and Service; L. J. HANSEN, U. S. Maritime Commission; F. H. GALLAGHER, American Bureau of Shipping.

Center row, left to right: FRED CLUTE, Ray Oil Burner Company; E. H. SAUNBY, Standard Oil Company of California; C. A. MISENHIMER, Fairbanks Morse and Company; JAMES G. CAMPBELL, Corps of Engineers, Department of Army, Floating Plant; K. M. WEBB, Board of Marine Underwriters of San Francisco, club vice-president; H. G. MARTELL, The Texas Company, program chairman; CLYDE O. TOOLE, American Mail Line.

Bottom row, photo to left—standing: ED MATTHEWS, States Steamship Company; DREW HAINES, Haines Enterprises; B. P. THIBADEAU, American Bureau of Shipping; CAPTAIN HUGH SHAW, Shaw Brothers and Associates; W. C. THOMPSON, Thompson Instrument Service; Seated: JOSEPH LONG, JR., American Bureau of Shipping; STANLEY E. WATT, Matson Line, club secretary-treasurer.

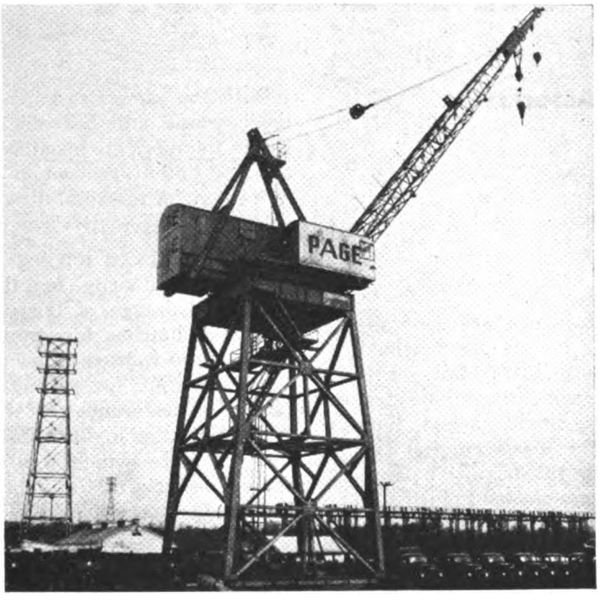
Center, C. E. EMMONS, Technologist, Technical and Research Division, The Texas Company, Los Angeles.

Right, left to right: FRED A. NITCHY, JR., John H. Marvin Company; GEORGE LARSEN, General Petroleum Corporation; standing: JAMES SLATER, WALTER NAGELY, Boiler Engineering and Supply Company; H. H. WOLFE, Shaver Transportation Company; J. W. DICKOVER, port captain, San Francisco, States Steamship Company.



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FOR SALE--36 TON WHIRLEY CRANE



PARTICULARS

Model—200. Serial 232. Capacity—36 tons.
Hoist Speed M. Hook—33′ per minute
Hoist Speed Whip Hook—100′ per minute
Slewing (Rotating Speed)—1 RPM
Traveling Speed—200′ per minute
Weight of Crane (Exclusive of Counterwt.)—108 tons.
Weight of Counterweight—36 tons.
Railroad Track—100 to 131#.
Height—Ground to Base of Cab—50 feet.
Width—28′ track. Trucks—2 wheels each.
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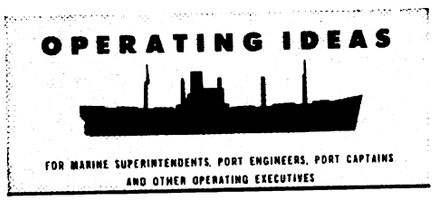
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CARGO HANDLING ADVANTAGES OF MACHINERY AFT DESIGN

Ship design incorporating Navy Industrial Association recommendations.



By E. V. LEWIS
Naval Architect
George C. Sharp

Recent Studies

The preceding article (The LOG, March 1949) in this department dealt with the design of rigging fittings. Another aspect of cargo handling which is always of interest is the problem of increasing overall efficiency, and the naval architect is principally concerned with means of achieving this during the design stages. There have been a number of comprehensive studies of cargo handling efficiency recently, in particular "An Analysis of General Cargo Handling," by Leslie Quackenbush. (See the March and April, 1948, issues of The LOG.) More recently the Navy Industrial Association has published an interesting list of desirable features for cargo handling in a modern ship. It is proposed here to illustrate how some of the desirable features outlined in the discussions mentioned above can be provided by the naval architect. Of course, all of the recommended characteristics cannot readily be obtained in one ship, and therefore a selection has been made of those which would be desirable for an assumed hypothetical service. For other services, another selection of qualities could be made and other solutions worked out.

Machinery Aft

Everyone seems agreed that one of the most advantageous features of design leading to efficiency of cargo handling is the placing of machinery aft so as to provide the largest number of rectangular shaped holds. Accordingly, a C-4 type ship with machinery aft has been selected as a basis for study, and plans of a modified C4-S-A4 cargo ship are shown here. It should be noted that although the C-4 is too large a ship for many trades, a similar arrangement of holds could be adopted in a vessel of the size of a C-2 or C-3. By allocating the best part of the ship to cargo holds, one is able to reduce broken stowage, speed up cargo loading and facilitate the use of lift trucks and other mechanical equipment.

The C-4 is notable also in having a large number of holds, the capacities of which are unusually well distributed. The five amidship holds, which are generally 55 ft. in length and double ganged, have capacities of 128,000 to 134,000 bale cu. ft. The two end holds, which have considerable shape and are single ganged, have capacities of around 45,000 cu. ft. This seems to be a very satisfactory balance, since the capacity of a shaped hold should be less than half that of one of the other holds. In addition, it should be noted that the maximum amount of cargo to be handled by one gang is 134,000 divided by 2, or 67,000 bale cu. ft. This compares with a maximum of 90,000 bale cu. ft. for the No. 3 hold of a C-3, for example. In a system making extensive use of palletized cargo, the end holds would undoubtedly be reserved for cargo which could not be palletized.

Hatches

A typical C-4 cargo ship has seven hatches, all of which are double ganged except the two end hatches. A disadvantage, however, is the relatively small size of hatches in relation to deck areas (18′ x 27′). Accordingly, in the modified design shown here, larger hatches have been shown—generally 25′ x 36′. This provides a platform around the hatch which is not over 17 ft. wide and a hatch area which is over 23 percent of the total deck area. The latter percentage compares with 17 to 18 percent for a typical C-3 cargo ship. These large hatches permit cargo to be spotted closer to the point where it is to be stowed and reduce the distance that it must be moved to its stowed position.

The hatch covers recommended for the large hatches are pontoon covers for the weather deck, six 6′ x 25′ covers per hatch, and 9 ft. metal hatch boards with three hatch beams per hatch at other decks. Other solutions to the hatch cover problem could be made, but the emphasis should be on speed of opening and closing.

Other Possible Modifications

A somewhat more radical change in the design would offer further interesting possibilities. By shortening the amidship holds, an arrangement could be worked out with one more hold and two more sets of cargo gear. A typical hold would then be 46′-0″ x 71′-6″ with a capacity of 112,000 bale cu. ft. or 56,000 cu. ft. per gang.

With the same size hatches (25′ x 36′), there would still be sufficient space between them for the installation of winches, and the hatch area would then be a full 28 percent of the total deck area.

Topping Lifts

Power operated topping lifts should be provided, primarily for the purpose of taking advantage of the potentialities of the large hatches for spotting cargo exactly where wanted. They also would reduce the time for setting up gear, and reduce interference between the two gangs working in the same hatch. Platforms for the winch controls have been shown because of the improved visibility provided, especially when deck cargoes are carried.

Spacing of Decks

One of the Navy recommendations which is intended to facilitate the use of mechanical equipment handling palletized cargo is to provide a uniform depth of holds and 'tween decks of about 13 ft. This arrangement has been shown in the design, though in many services some other spacing of decks would be preferable. For example, if the Navy suggestion for "sideports and wide open upper 'tween decks for continuous stow of tractor trains" is to be adopted, then the upper 'tween deck height must be reduced sufficiently to provide the required freeboard to the upper deck. The 13 ft. height is intended to permit three 4 ft. pallets to be stowed on top of one another.

Of course, a serious problem involved in the use of gasoline engine driven equipment within the confined spaces of a ship is the disposal of carbon monoxide gas. It is understood that a muffler has been devised which removes this gas from the exhaust.

Summary

Summarizing then, the following items of the Navy recommendations have been obtained in the design shown here:

1. Machinery aft, not amidships.
2. Uniform clear height of all cargo decks—about 13 ft.
3. Equal handling time for all holds.
7. End holds which are shaped and less square, to be designed for miscellaneous and long cargo.

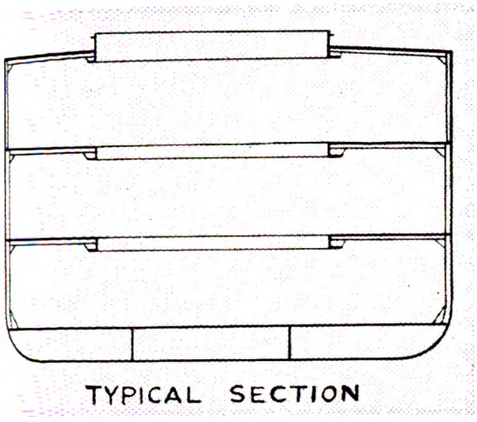
In addition, the following features have been obtained:

Large hatches, with power topping lifts for accurate spotting of cargo.

Number of hatches and sets of gear to provide not over 67,000 bale cu. ft. per set of cargo handling gear, with the possibility of a reduction to 56,000 cu. ft. if desired.

It is believed that this modified C-4 design would not only achieve a large number of the Navy features, but would

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TYPICAL SECTION

provide a noticeably improved efficiency of cargo handling without resorting to radical innovations.

As for the Navy recommendations which have not been embodied in the design shown here, they are ideally illustrated by the cargo handling methods used by the Canada S.S. Lines. These remaining features are:

4. Side ports and wide open upper 'tween decks for continuous stow of tractor trains.
5. L.S.T. principle of ramps and continuous rolling movement wherever possible.
6. Continuous elevators.
8. Clear area on deck between hatches for operation of mechanized equipment.

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THE SOCIETY OF PORT ENGINEERS

(Continued from Page 50)

with resulting elimination of head gaskets and cylinder head fits.

(2) Elimination of non-working parasite gas pressure against the cylinder head and conversion of that pressure to useful force operating against the opposite piston.

(3) One end of the cylinder completely free to expand.

(4) An inherent mechanical balance which makes high rotative speeds possible with a minimum of balance.

(5) Uniflow scavenging in a minimum of time permitting operation at relatively high operating speeds with good combustion.

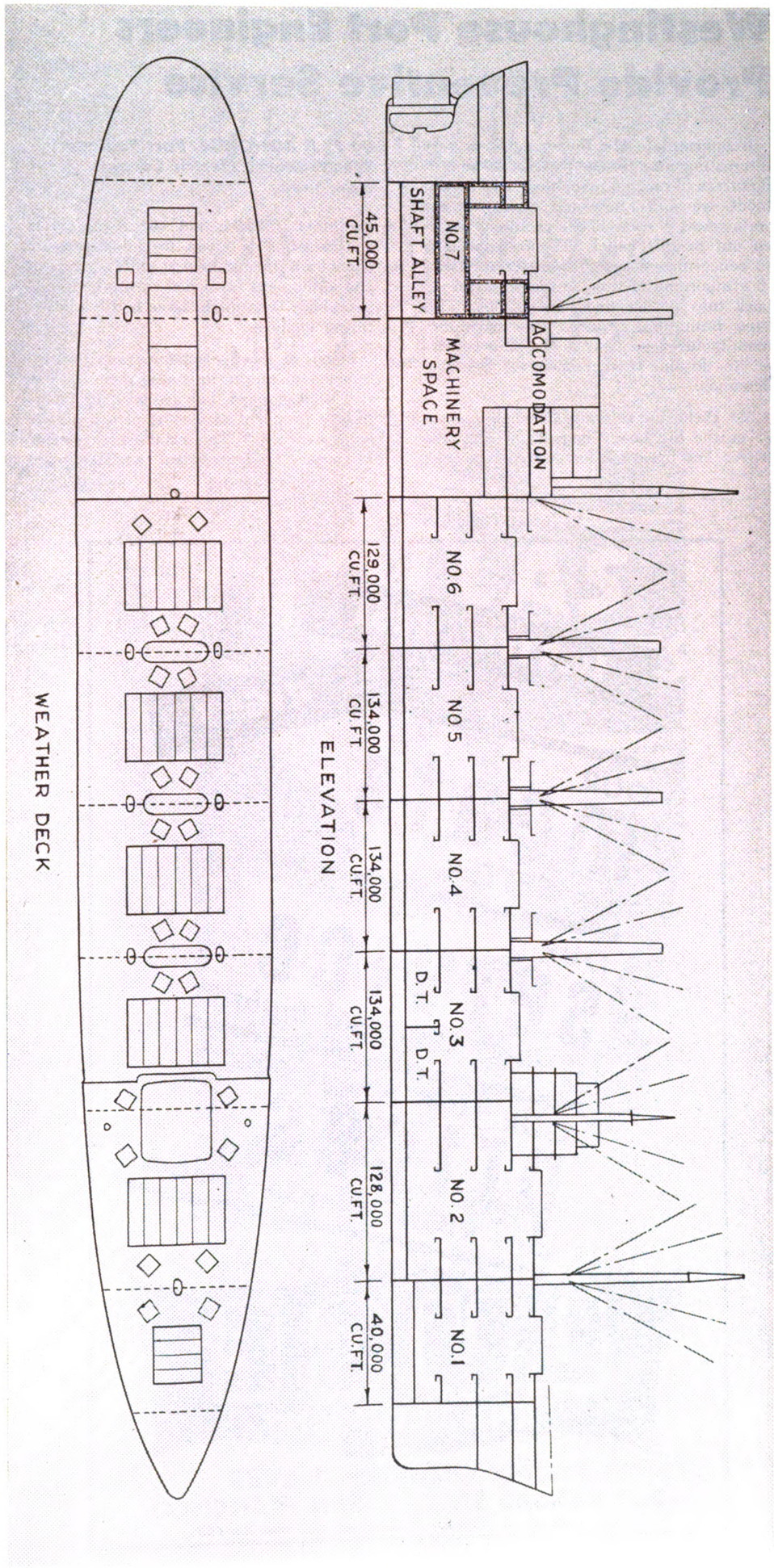
With more than 200 in attendance the annual dinner dance of the Puget Sound Society was held in February.

Fire fighting with the use of carbon-dioxide gas, courtesy C-O-TWO Fire Equipment Company, was the subject up for discussion at the Columbia River meeting in March.

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27,476 passengers traveled on the U.S. Lines' AMERICA during 1948; 27,440 traveled on the WASHINGTON.

MODIFIED C-4 DESIGN



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Westinghouse Port Engineers Provide Preventive Service

By F. J. DONOHOE, Port Engineer
Westinghouse Electric Corp.,
New York

I congratulate Mr. Pickering for a very interesting and timely paper. As manufacturers of marine machinery and equipment, we well know and concur in the seriousness of some of the problems pointed out in this paper. This is especially so concerning repairs to be accomplished in a minimum of time so the ship can get back into service and earn money. This time limitation requires the machinery manufacturer, as well as the ship repairer, to do the *heroic* whenever occasion demands.

Mr. Pickering refers to the manufacturer as the big boogy-boo of the ship repairer, and the cause for many white hairs sprouting. This is not surprising when consideration is given to the variety of ships built during the war with machinery and equipment furnished by anybody and everybody who might have had manufacturing facilities.

Many of these companies are not interested in marine business now, or may still be interested, but are without facilities to properly service their equipment on board ship. The established marine machinery and equipment manufacturers, such as Westinghouse, to whom the marine industry is an integral part of their business year in and year out, know how important it is to service their equipment, to furnish parts or make repairs quickly and accordingly have set up facilities to best accomplish this result. For shipboard machinery and equipment this requires a special service set-up. In our company we call and advertise this as the *Merchant Marine Service Plan.*

In this service plan, we, for example have gone "All Out" to make available that "Material—Special and Replacement" mentioned in the paper, by setting up marine warehouses at focal ports throughout the United States. There, a stock of the parts, which our experience has shown may be needed, are kept available for immediate delivery. This embraces not only the small electrical and mechanical parts most apt to wear or break, but items such as complete turbine spindles and blading, complete motors as well as armatures, coils and the like for protection against casualty. Maintaining a stock such as this makes for a huge inventory of completed parts on the manufacturers books so it is impossible to stock every large or detailed item. Such a stock, however, is a welcome asset to the ship repairer as well as the operator, and does, in most cases, permit quick repair in a minimum time.

Of prime importance also is the preparation of and seeing that both the shipboard engineers and shore staff are provided with adequate instruction and renewal parts books which describe the operation of the unit and make it easy to identify the part needed. These books prove invaluable in accomplishing a repair.

An angle to ship repairing that makes the problem complex is the fact that the needed repairs to a machine cannot be determined 'till it is opened up. Coupled with this, and further complicating the situation is the fact that sometimes the operator does not take steps to correct a minor fault before it develops into a casualty. We try to prevent this happening by having competent marine service engineers regularly visit ships, learn of the operating troubles or defects and make suggestions for corrections. This engineer will also check the renewal parts books and aid the ship's personnel in identifying specific parts needed.

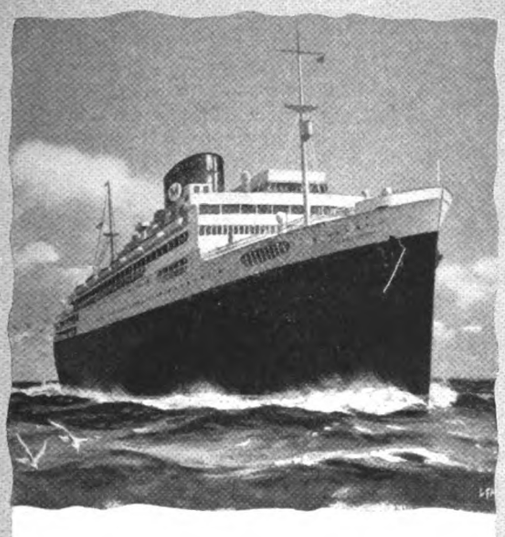
Further, suggestions are offered toward replenishing shipboard spares so an ample supply of parts are available aboard ship. These available parts on board ship aid appreciably in accomplishing a repair on time. It is also important that an operator having a number of similar ships maintain a protective supply of shore

(Continued on Page 60)

*Presented as part of the discussion of the paper, "Some Problems of Ship Repairing," by Langdon D. Pickering, Consulting Engineer and Marine Surveyor, before a joint meeting of the New York Metropolitan Section, The Society of Naval Architects and Marine Engineers and The Society of Marine Port Engineers New York, N.Y., Inc., January 28, 1949. Mr. Pickering's paper was printed in The LOG for March.



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SS OLYMPIC GAMES

(Continued from Page 45)

gear is a two cylinder, electro-hydraulic unit with dual power plants. A separate ram group and hand pump are installed for rudder braking and emergency steering. Remote control provisions include an hydraulic telemotor system, with alternate electrical control by the gyro pilot.

One steam cargo winch located forward, and two steam mooring winches, one midships and one aft, all built by the American Engineering Co., are provided on the upper deck. The rigging includes one 4-ton, 60-ft. boom on the forward side of the fore mast, two kingposts, amidships, each with one 4-ton 21-ft. boom, forward, and one 2-ton 21 ft. boom aft.

A 12" x 14" horizontal compound geared steam windlass is installed for handling the two Baldt Anchor Chain & Forge Co. stockless 12,005-lb. anchors and for handling lines forward. A spare anchor of 10,220 lbs. is also provided, as well as a stream anchor of 4305 lbs. The anchor chain is 2-5/16-in. Di-lock forged-steel chain.

The life-saving equipment includes four 22-ft. oar-propelled life boats on hand-operated mechanical davits, two aft and two amidships. Each boat will accommodate 31 persons.

Crew Quarters

Fire-proof construction is used throughout, with steel-faced panels for bulkheads and ceilings on metal studding and furring. All panel joints are sealed with metal strips. Interior joiner doors are of metal, and all furniture and fittings are either of metal or other fire-proof material. The deck covering is of magnesite except in galley and pantries where non-slip tile on top of cement is used.

The appointments are entirely modern, and represent the latest practice in ship joiner construction. Quarters for officers, steward, and radio operator, as well as the officers' lounge, are located in the midship deck house. Here, also, is located an owner's suite.

Mess rooms for officers, petty officers, and crew are located aft. All mess rooms and quarters, including those of the crew, are supplied with forced ventilation. Sufficient ventilation has been provided to insure fifteen complete changes of air every hour in all mess rooms and living quarters. Chilled drinking water is available in convenient locations.

Aft, on the upper and poop decks are galley, cold storage, provision stowage, hospital, baths. Accommodations for the engineering officers are located on the port and starboard sides of the poop deck, while the engine room crew has accommodations on the port side of the upper deck and the deck crew on the starboard side. A steel fore-and-aft catwalk with subway grating panels is fitted from the poop to the bridge.

The OLYMPIC GAMES is built for carrying petroleum products in bulk to the highest class of the American Bureau of Shipping, under their special survey and classification, and conforms to the regulations of the U.S. Coast Guard, the U.S. Public Health Service, and the Panama and the Suez Canal authorities.

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PAB Line Inaugurates New Refrigerated Ship Service

The first sailing of the new refrigerated ship service offered by the Pacific Argentine Brazil Line, operated by Pope & Talbot Lines, was inaugurated with the sailing of the P & T FORESTER from San Francisco. Additional C-3 cargo vessels will sail on a 30-day frequency from Pacific Coast ports via Panama Canal to the important cities of the Caribbean and the East Coast of South America as far as Buenos Aires. In addition to carrying cargo, PAB ships are modernly equipped to accommodate twelve passengers who may desire a leisurely ocean voyage.

The ships are equipped with twelve refrigerated compartments with a capacity for 1000 tons of perishable commodities. Each compartment is engineered to maintain a controlled temperature to assure top-delivery of products at the point of destination. Fruits, vegetables, meats, dairy products and other like commodities can now be marketed with profit in South American cities.

An error of omission occurred in the article by Joseph Curran appearing in the February issue of The LOG. The fifth paragraph, first column, page 50, should have read: "We need commissioners who believe in a strong merchant marine under the United States flag; commissioners who have the intestinal fortitude and intellectual honesty to insist that $ (dollar) patriotism in the merchant marine be ended." In printing the dollar sign was inadvertently omitted.

Editor



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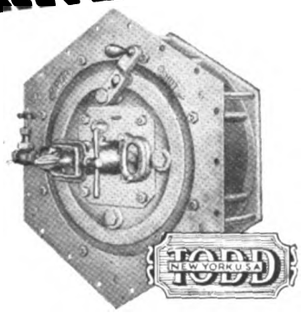
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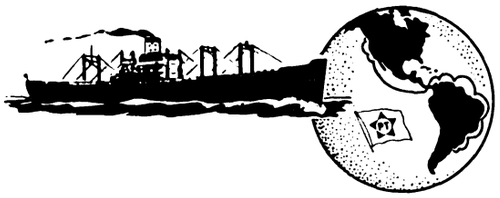
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EQUIPMENTALK

Steelcote Mfg. Appoints West Coast Distributors

Steelcote Manufacturing Co., St. Louis, Missouri, announces appointment of Standard Distributing Co., San Francisco, and W. J. (Bill) Robbins, Portland, as exclusive marine distributors in their respective areas.

David J. Spieldoch, sales manager for Steelcote, points out this addition of San Francisco and Portland gives his firm marine outlets in every major port of the United States.

Other marine dealers are: Selby, Battersby Co., Inc., Baltimore, New York, Boston, Newport News and Philadelphia; Gulf Engineering Co., New Orleans, Houston, Galveston and Corpus Christi; Marine Specialty Co., Mobile; Marine Service, Inc., Seattle, Eaves & Meredith Co., Ltd., Honolulu, and Universal Specialties Co., Los Angeles-Long Beach.

Standard Distributing Co., located at 271 Ninth St., San Francisco, is distributor for Pabco marine paints and has been serving the waterfront in that city 25 years. Bill Robbins, 2201 N. Thurman St., Portland, is marine dealer there for International paints, the Coen Company, Bird-Archer and Gamlen products, Todd Combustion and Condenser Service and Engineering Co.

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Edgar Martin, formerly marine manager at San Francisco for the Westinghouse Electric Corp., is now a marine distributor in that city and represents the Amercoat Division of the American Pipe & Construction Co., Los Angeles.

DEMA Averages Monthly Educational Meetings

When the Diesel Engine Manufacturers Association completes its one-week educational session at the University of Wisconsin next September 3, it will have held, within a year's time, 10 educational meetings—an average of nearly one per month.

The meetings will have been held at widely scattered points of the nation—from Massachusetts to California, and from Wisconsin to Louisiana. They will have been attended by several hundred college and university professors who teach courses related to Diesel engineering in the areas in which the meetings are held. Most of these instructors pay their own expenses to these meetings, which are usually arranged at a plant where Diesel engines, or Diesel engine parts or supplies, are made. Occasionally a session is held at a top-ranking mechanical engineering school.

All meetings, regardless of where they are held or who the hosts are, have three things in common. First, the guests are invariably instructors in Diesel engineering from the country's leading mechanical engineering schools. Second, they hear technical talks by experienced engineers from the industry which acquaint them with commercial engineering practices and problems. Third, they are provided the opportunity of seeing first-hand in the manufacturing plants, how the engines, parts and supplies are manufactured. The overall effort assists those professors who attend the meetings in obtaining a better understanding of the industry, which is most helpful to them in their day to day work as mechanical engineering instructors.

This tie-up between school and factory is a practical educational project without parallel in the annals of American industry. It is a long-range effort that will require time for its fruition, and that is why its sponsor, the Diesel Engine Manufacturers Association, has allotted five years in which to carry it out.

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Data Available on De-scaling Heat Exchanger Tubes

"On-the-spot" de-scaling of fouled heat exchanger tubes with specially developed mechanical cleaners was discussed at the last annual meeting of the American Society of Mechanical Engineers by A. John of Thomas C. Wilson, Inc.

In his report, Mr. John pointed out the many advantages of the direct drive air-operated mechanical tube cleaner, particularly where tubes are badly fouled or plugged. This outside suspension type cleaner can be regulated with finger-tip pressure. The hollow rotary shafts come in lengths suitable to the heat exchanger being cleaned. Either air, water or steam can be used as the scavenging agent. Typical applications of both heavy-duty and light-duty cleaners were given.

The paper also presented data on electrically driven flexible shaft tube cleaners for use in confined quarters or where compressed air is not readily available. Clean-outs of return bend type of heat exchanger as well as the use of "turbine" type cleaners for de-scaling boiler tubes were discussed.

A copy of this paper can be obtained by writing to Mr. A. John, assistant general manager, Thomas C. Wilson, Inc., Long Island City, N. Y.

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Robt. G. Allen Pacific Co. Names Johnson District Mgr.

New Northern California district manager for the Robert G. Allen Pacific Co. is Ernie Johnson, formerly port engineer for Pacific Tankers, Inc., and the Hillcone Steamship Co. Mr. Johnson's headquarters are at 34 Davis Street, San Francisco, telephone GArfield 1-8355. Announcement of this appointment was made by John H. Cordes, Cordes Brothers, vice president of Allen-Pacific.

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Larry Rapp, for the past six years service engineer with C. C. Moore & Co. Engineers, San Francisco, has resigned to become a salesman with The Anchor Packing Co. in northern California.

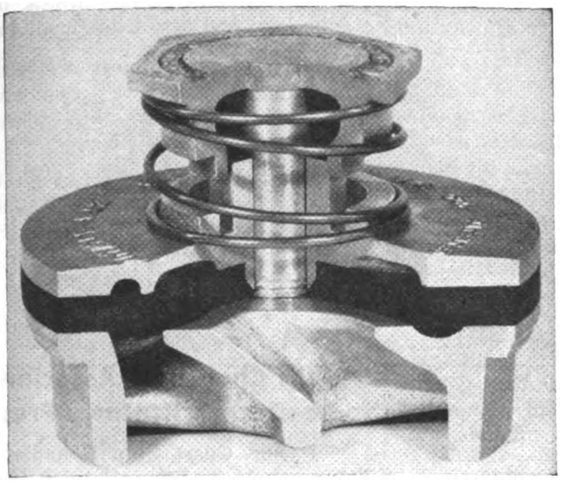


STEELCOTE NAMES STANDARD DISTRIBUTING—left to right: D. J. SPIELDOCH, Sales Manager Steelcote Manufacturing Co., St. Louis, and GEORGE R. VAIO and LOUIS LEVIN, Sales Manager and President, respectively of Standard Distributing Co., San Francisco.

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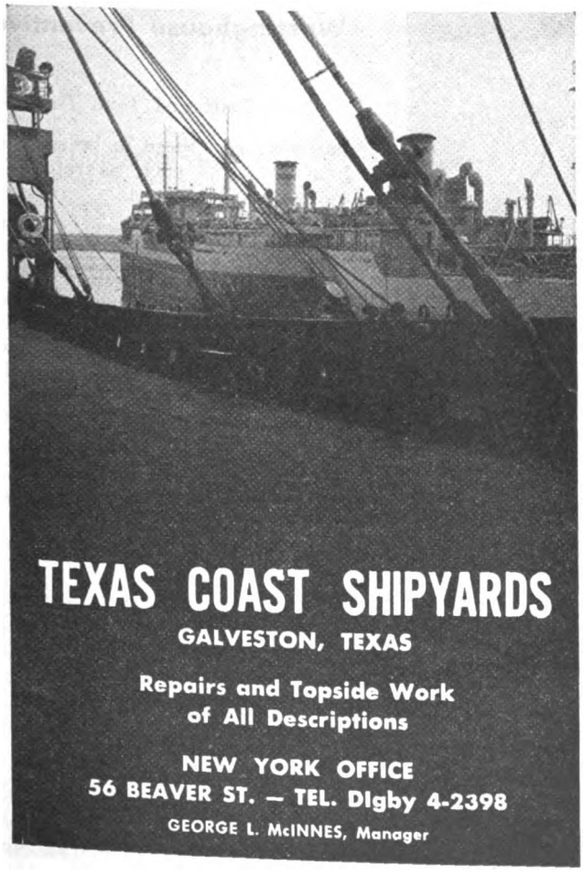
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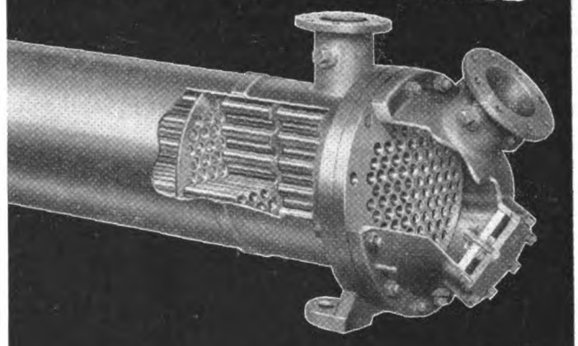


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Access to both the inside and outside of "BCP" tube surfaces is gained in a matter of minutes. Detachable bonnets (merely unbolted) simplify straight-through cleaning of inner tube surfaces. The seamless tube bundle is likewise easily removable for inspection and cleaning of outer tube surfaces. Design features, thus aimed not only at prime ease of maintenance, but at prime performance, too, rank high among the reasons for "BCP" preference . . . a preference expressed by primary equipment manufacturers, shipbuilders and by maintenance minded ship operators.

It's true that high level performance features such as transverse baffling, packed floating head and roller expanded tube joints are the major reasons for "BCP" preference. Yet if *practical accessibility* had not been made the common denominator of *all* "BCP" components, these valued features would lose much of their attraction for those who look beyond first cost.

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SS RICKETTS' Broken Windlass Gives Jitters to Boys Ashore

On Monday, February 21, Western Machinery Corporation, Portland, received a rush order from its San Francisco representative, Tom Baird, for replacement frames for the anchor windlass on the Luckenbach Steamship Company's Liberty ship HOWARD T. RICKETTS at Honolulu with instructions to fly them to San Francisco to connect with the Navy flying boat MARS.

Western Machinery had the frames, but they were not completely machined, and the plant had no swing shift to do the work that Monday evening. And the next day, Washington's Birthday, was a holiday for the machinists' union, too. So Western sent the frames to another Portland machine shop which put on a swing shift and then a graveyard shift to complete the job to catch a southbound plane at 12:55 p.m. Tuesday.

Crates were made and a truck was ready at 10:00 a.m. Tuesday morning but bad luck with tools on the machine caused a 2½-hour delay. This was but the start of numerous delays.

The truck finally left the plant at 12:30, stopping to get the weight—2,200 pounds—and arrived at the Portland airport at 12:50 with five minutes to make the plane. But the ship was late and the dispatcher refused to hold it for the load. Two other regular southbound flights didn't want the cargo, so the truck trundled it back to the Western warehouse. They had missed the MARS' sailing from San Francisco!

Early Wednesday morning they got the crates aboard a southbound plane, but it was back at the field 20 minutes later with a crippled engine! Western still hadn't gotten the frames out!

Finally, in desperation, the San Francisco office of Luckenbach chartered a Trans-Oceanic plane, which picked up the load and flew it to Honolulu.

"We did our outmost to give the quickest possible service" commented Jack Nielsen of Western, "but appeared to be working against a jinx."

"Western surely gave us service, without a doubt," commented Jack Bolts, Luckenbach purchasing agent at San Francisco, "but it was three days of ulcers!"

⚓ ⚓ ⚓

FAST BOILER CLEANING is provided by this big new 10-ton Mack truck recently placed in service by SUMCO PRODUCTS, INC., Brooklyn, which handles boiler cleaning work from the Norfolk-Newport News area to Portland, Maine and Port Alfred, Quebec. Fully equipped, the truck does *not* have to borrow any power from ship or shore sources.

The big tank has sufficient chemical capacity to clean six boilers with one load, and a complete boiler cleaning job, including neutralization, can be performed in 12 hours. The smaller truck just showing to the left, carries full equipment for cleaning condensers, evaporators, lube oil coolers, turbine lube oil systems, fuel oil heaters, Diesel engine jackets and the removal of preservatives from steam and water systems of vessels coming out of lay-up.

In the New Orleans area, Marine Industrial Service Co., offers a similar cleaning service as does the Western Ship Service Co. of San Francisco, both employing the Sumco System of cleaning boilers and heat exchangers of all types. Other Sumco representatives, which are located in all major ports, offer material and supervision for all types of chemical cleaning work.



Ship Chandlers Association Re-elect C. K. Howe President

Pacific Coast Ship Chandlers Association held its sixteenth annual meeting in San Francisco in February and re-elected C. K. Howe, Weeks, Howe, Emerson Co. again as president. Mr. Howe has headed this organization since its inception.

A. J. Clark, Jr., Oregon Marine Supply Co., Portland, was elected as a director to take the place of the late Carl Thomas of the same company.

There was a good attendance, with members present from Wilmington, San Diego, San Pedro, Seattle and San Francisco.

⚓ ⚓ ⚓

Westinghouse Preventive

(Continued from Page 54)

based spares, these to be specifically the heavier items such as rotors, complete motors or armatures.

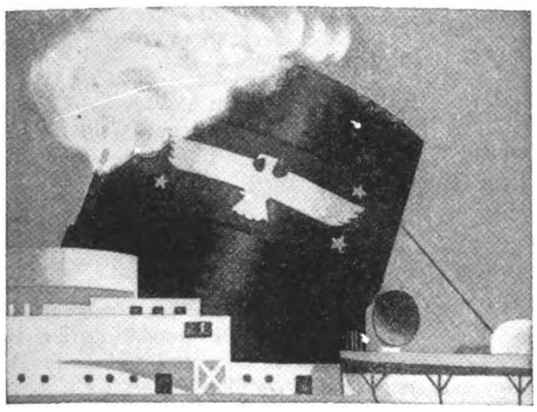
We have available repair shops throughout the country to repair and rebuild marine products to factory specifications. Electrical repairs often require more shop time than the actual labor involved, this is to care for impregnating baking and seasoning. Shop repair schedules must be geared to meet the ship repairer's schedule. Quick repairs by short cut methods, especially of motors and generators, are necessary at times but we believe such repairs are resorted to far too often with the result that often times the manufacturers product is criticized unjustifiably.

Thus the established machinery and equipment manufacturer has tried to have Mr. Pickering's "Material—Special and Replacement" available for immediate use by the ship repairer and permit him to do the *heroic*.

⚓ ⚓ ⚓

White & Holcombe, sailmakers, have enlarged their facilities at Pier 5, San Francisco, to include marine upholstering. Plans call for specializing in the use of foam rubber, although conventional spring construction will also be available.

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Crosby Becomes Sales Representative for Sopac

V. C. (Chick) Walker, manager of the Southern California operation of Sopac Ship Maintenance Co., San Francisco, announces appointment of Howard Crosby as sales representative. Mr. Crosby has worked for a number of years in ship maintenance on the Los Angeles-Long Beach Harbor and recently was with Llewellyn Marine Supply Co., Wilmington. Sopac's Southern California office is at 1555 West Ocean Boulevard, Long Beach.

⚓ ⚓ ⚓

Dee Engineering In Business Over Thirty Years

For thirty years the Dee Engineering Company, 170 Hooper Street, San Francisco, has been installing fire brick and insulation in all types of marine boilers. The firm, founded by the late Tommy Dee, carries a complete stock of all makes of refractory materials and special shapes of baffle tile.

Owners of the company are Daniel Dee and Tommy Dee, Jr. General superintendent is Chris Larsen, who has been with the company more than 20 years. Earlier he sailed in the engine department for several steamship companies.

⚓ ⚓ ⚓

Seaside Supply Appointed Dealers for Hart & Burns

Billy Mitchell, vice president in charge of sales of Hart & Burns, Inc., Riverside, Calif., paint manufacturers, announces appointment of Seaside Supply Stores, Inc., 803 South Palos Verdes Street, San Pedro, as Los Angeles-Long Beach harbor dealers for his firm's heavy marine Durahart and Navicote marine finishes. The Seaside firm, which carries a complete line of deck and engine room supplies, is headed by Rolf Sannes and Einar Richter.

⚓ ⚓ ⚓

Western Machinery, Portland, Appoint No. California Reps

Northern California representatives for Western Machinery Corporation, Portland, Oregon, are Thomas G. Baird and A. F. (Gus) Erke, who recently moved their offices from 112 Market Street to Pier 52, telephones EXbrook 2-1142 and 2-7870. Mr. Baird has been selling machinery on the San Francisco waterfront for 26 years.

Western Machinery Corporation manufactures winches, windlasses and other deck machinery.

The Baird firm also represents Standard Steam Winch and Hoist Co. of New York, manufacturers of marine machinery and equipment.

Gus Erke was a full colonel in the amphibian engineers during the war and holds the same rank in the Army reserve corps.

⚓ ⚓ ⚓

Ken Huntington, well-known in California marine circles, has joined the Los Angeles office of the Pacific Atlantic Steamship Co. as a salesman. He recently was marine sales representative for Republic Supply Co., Wilmington, and, previously, with Hammond Shipping Co., San Francisco.

SOPAC IN SOUTH—left to right: **HOWARD CROSBY** and **"CHICK" WALKER** of the Long Beach office of Sopac Ship Maintenance, Inc.

NEW HART & BURNS DEALERS—At the left is **ROLF SANNES** and at the right is **EINAR RICHTER**, heads of Seaside Supply Stores, San Pedro marine dealers and in the center is **BILLY MITCHELL**, Sales Manager of Hart & Burns, Inc., Riverside paint manufacturers.





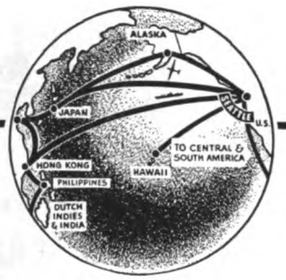




DEE ENGINEERING STAFF—left to right, back row: FRANK WALSH, Office Manager; TED KEELAN, Sales Manager; MARGARET CARPENTER, Office; CHRIS LARSEN, General Superintendent; front row: DANIEL DEE and TOMMY DEE, Jr.

WESTERN MACHINERY SAN FRANCISCO REPS—GUS ERKE and TOM BAIRD, who recently moved to Pier 52.

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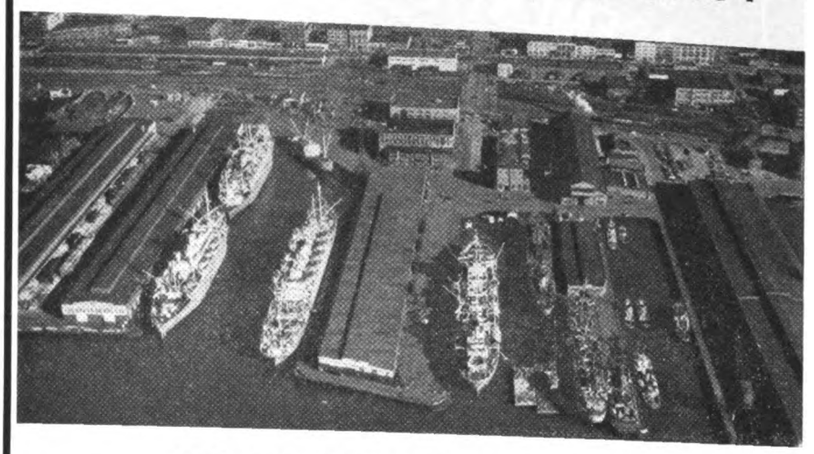
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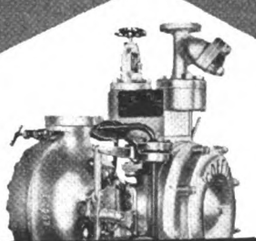
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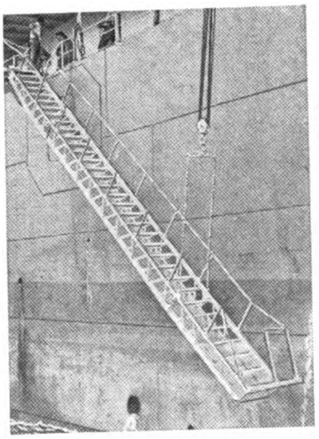
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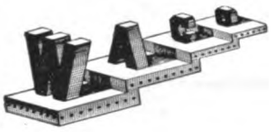
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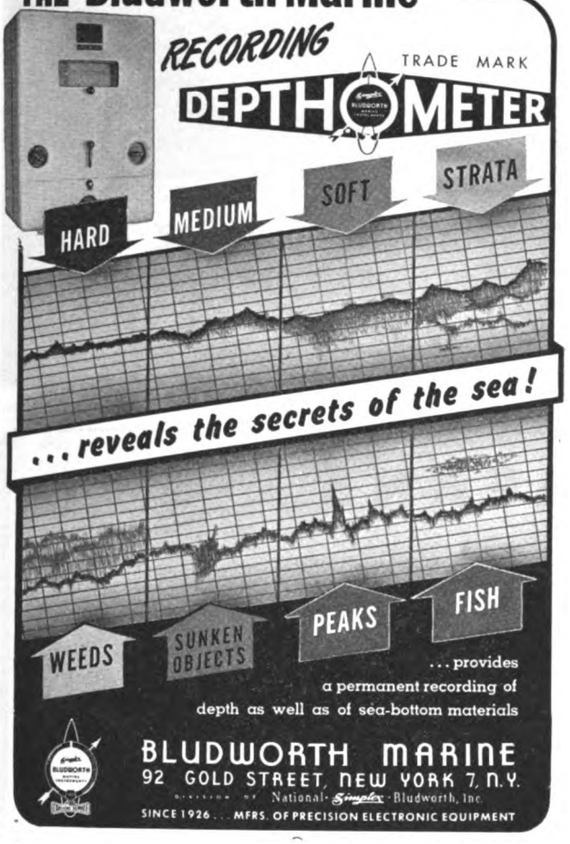
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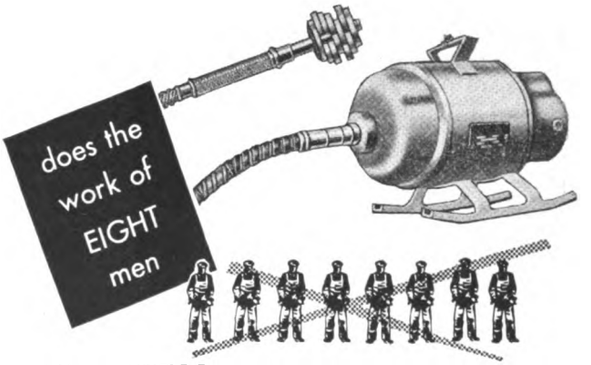
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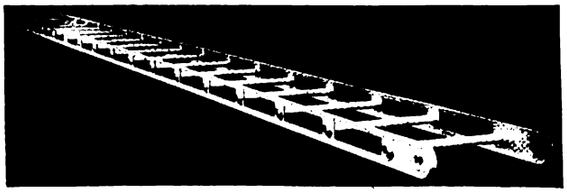
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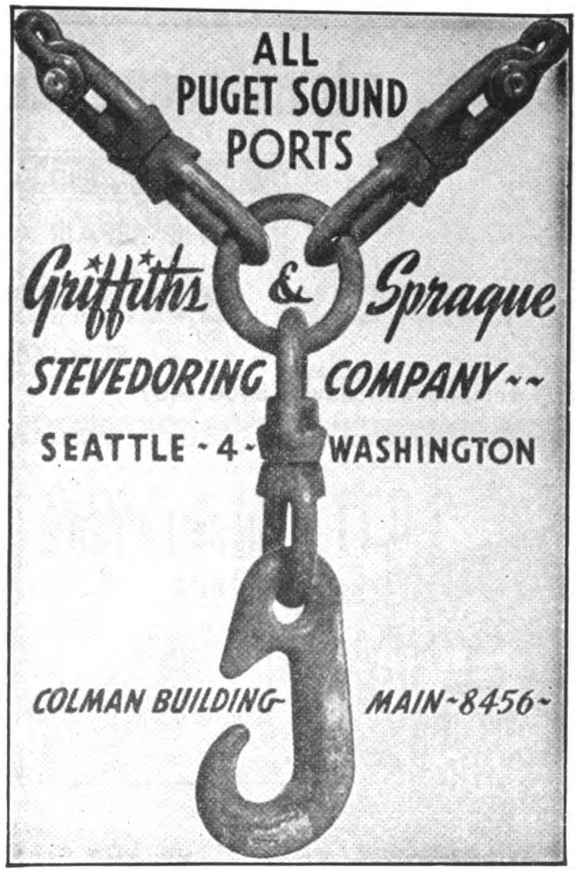
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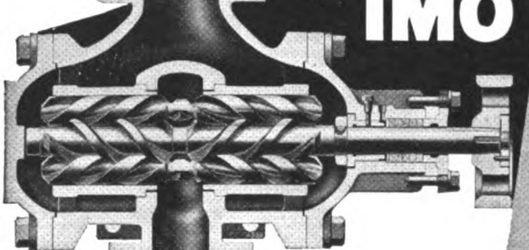
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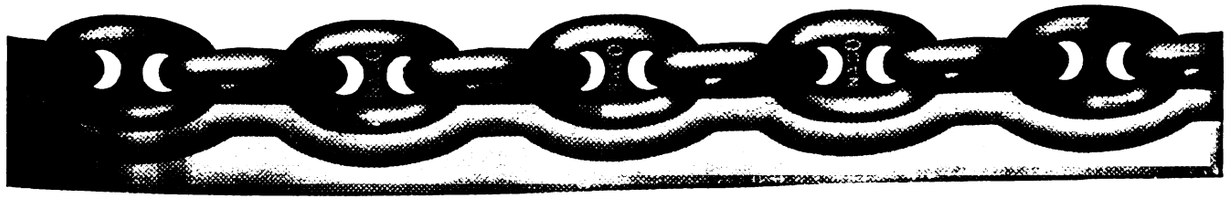
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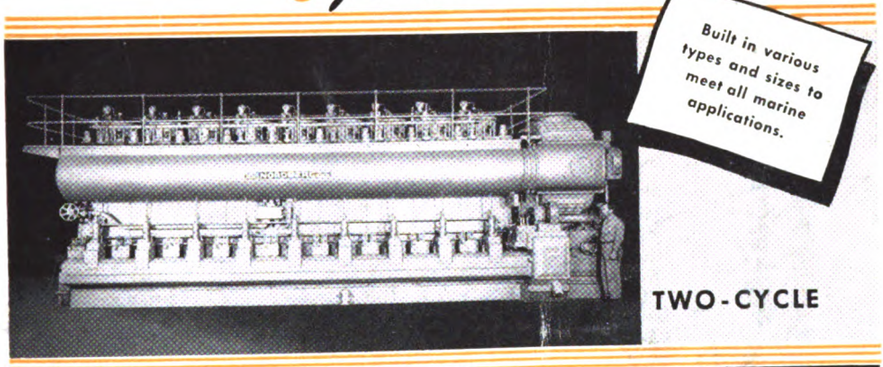
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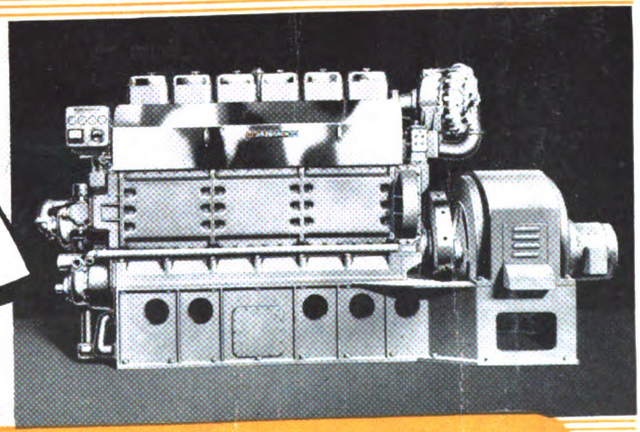
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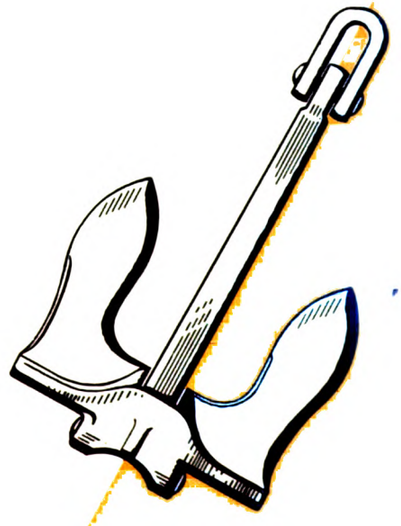
TWO-CYCLE

FOUR-CYCLE



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NORDBERG
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MAY 1949
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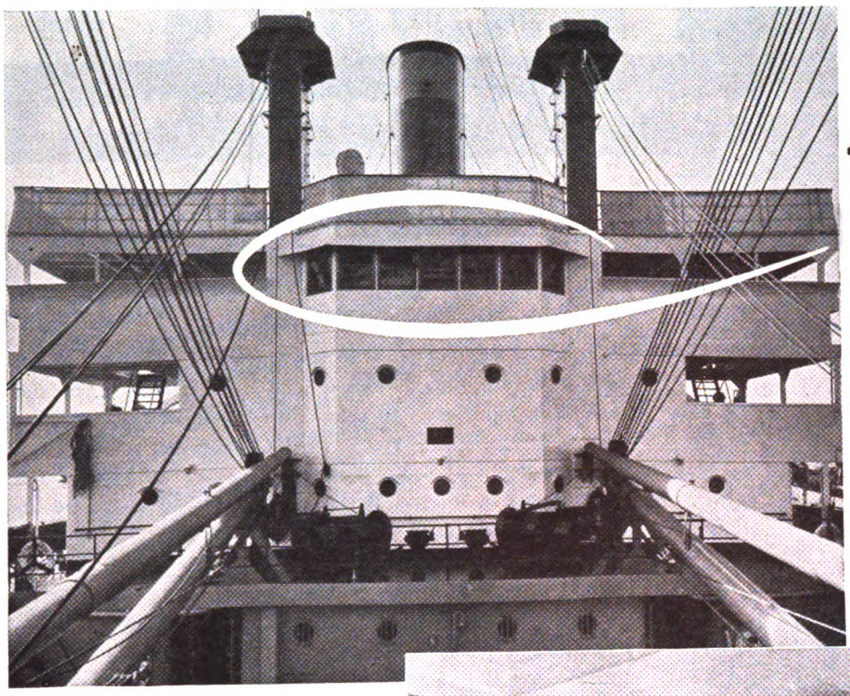
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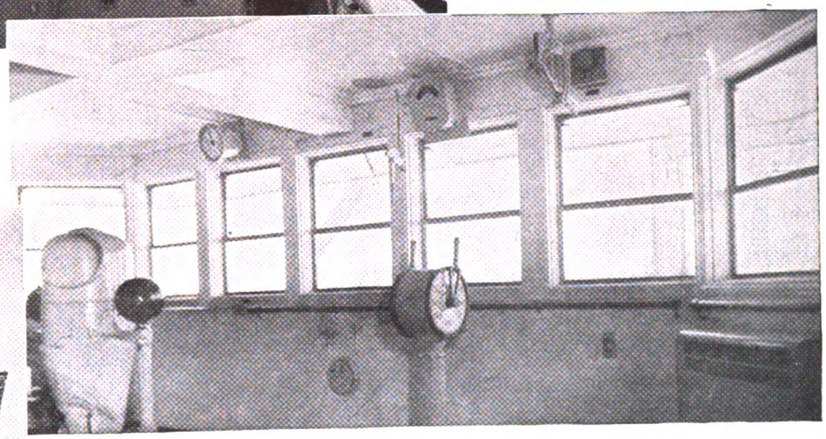
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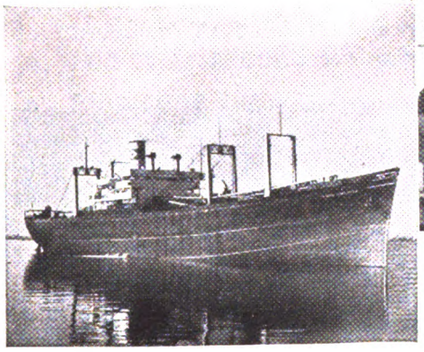


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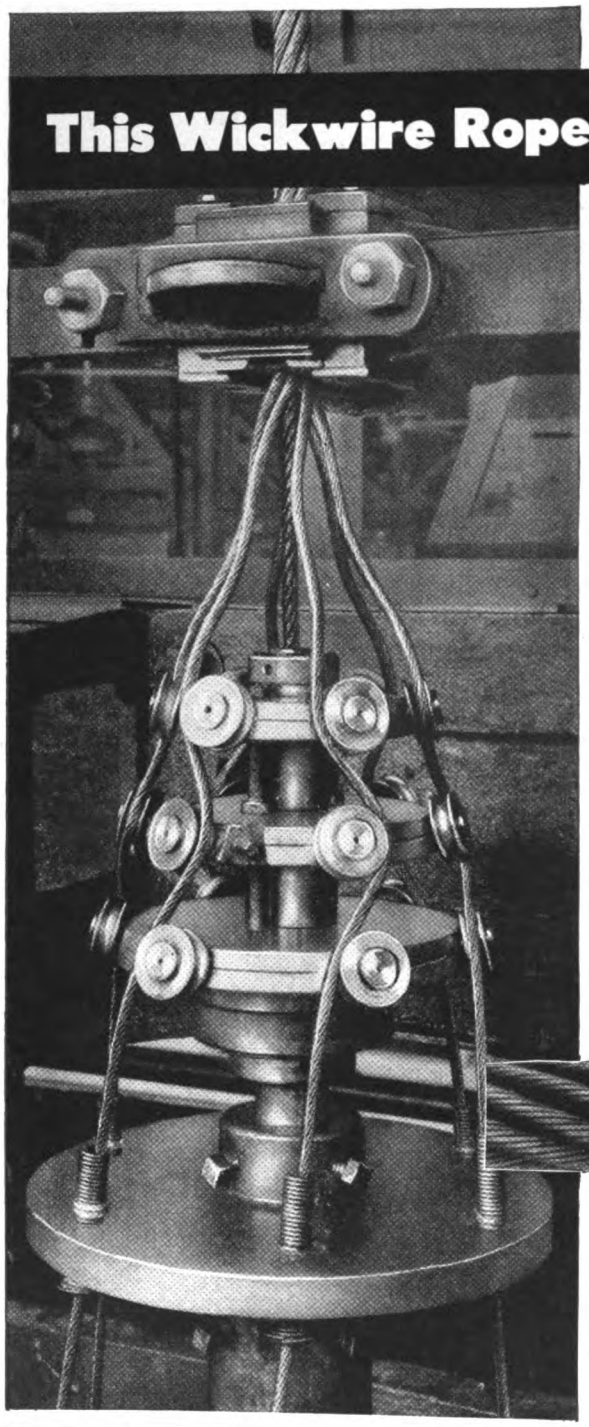
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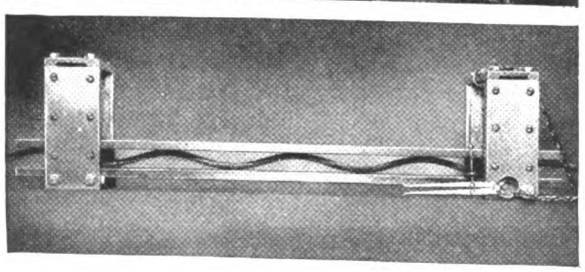


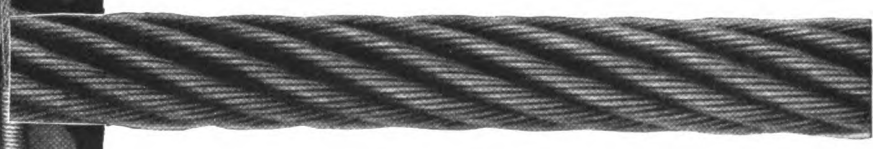
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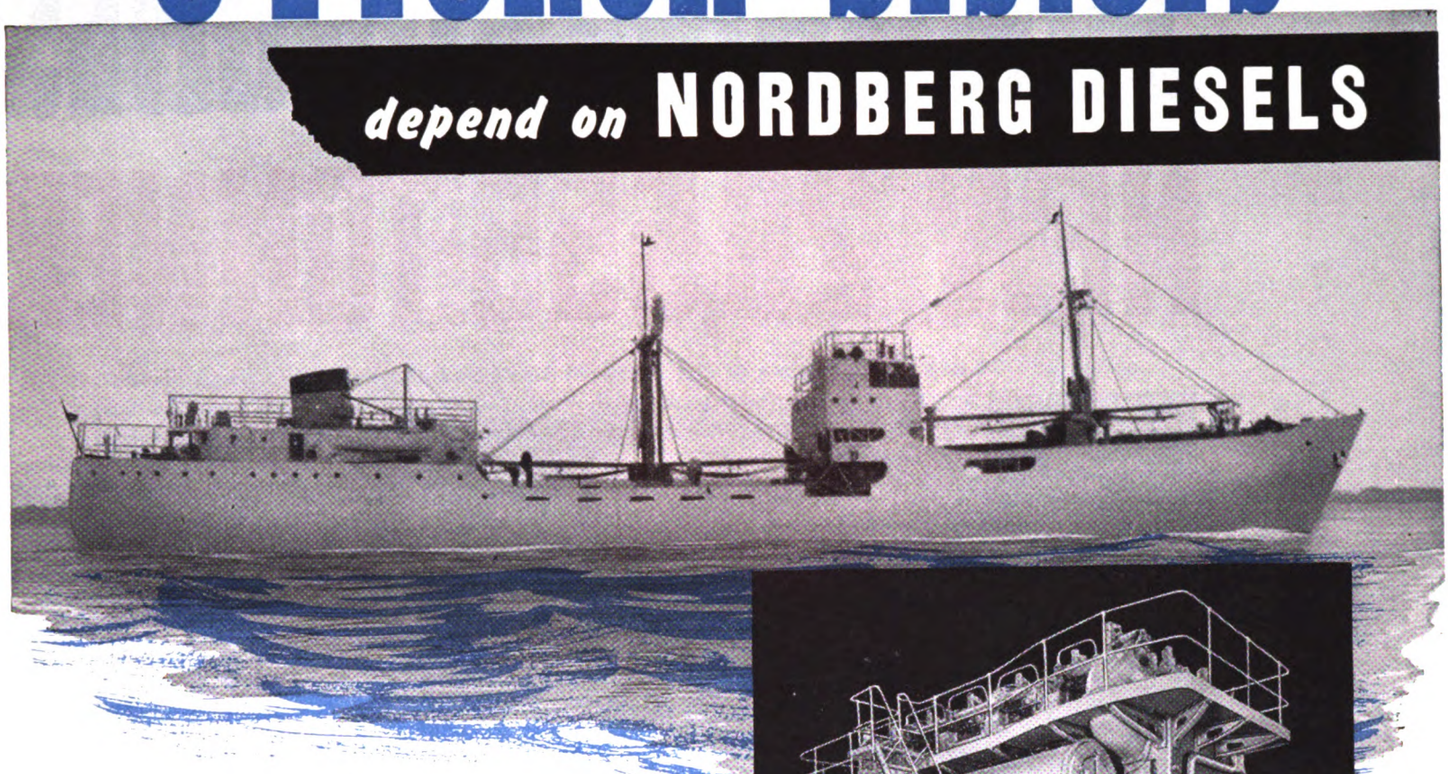
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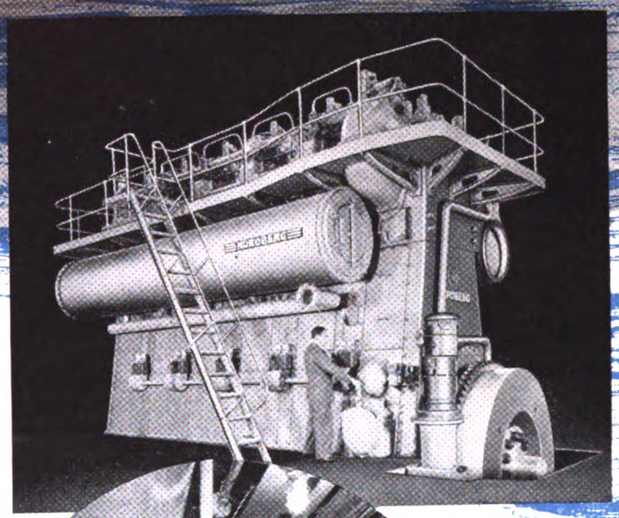
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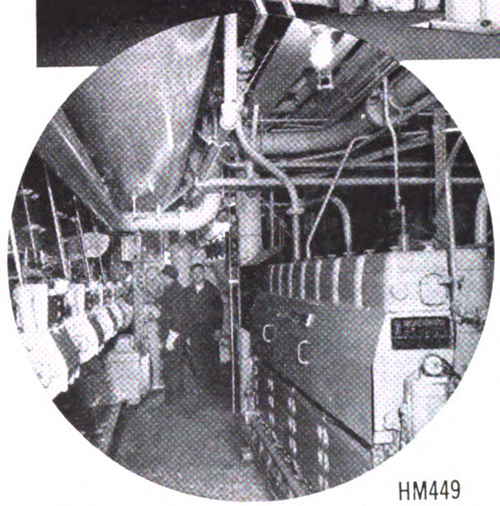
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ABOVE: Five-cylinder, 29″ x 40″ Nordberg two-cycle Diesel Engine developing 3100 S. H. P. at 150 R. P. M., used for main propulsion on board the *CAP CAPET* and five sister ships.

LEFT: Engine room view showing portion of Nordberg main engine and one of two 8-cylinder Nordberg Diesel generating units.

HM449

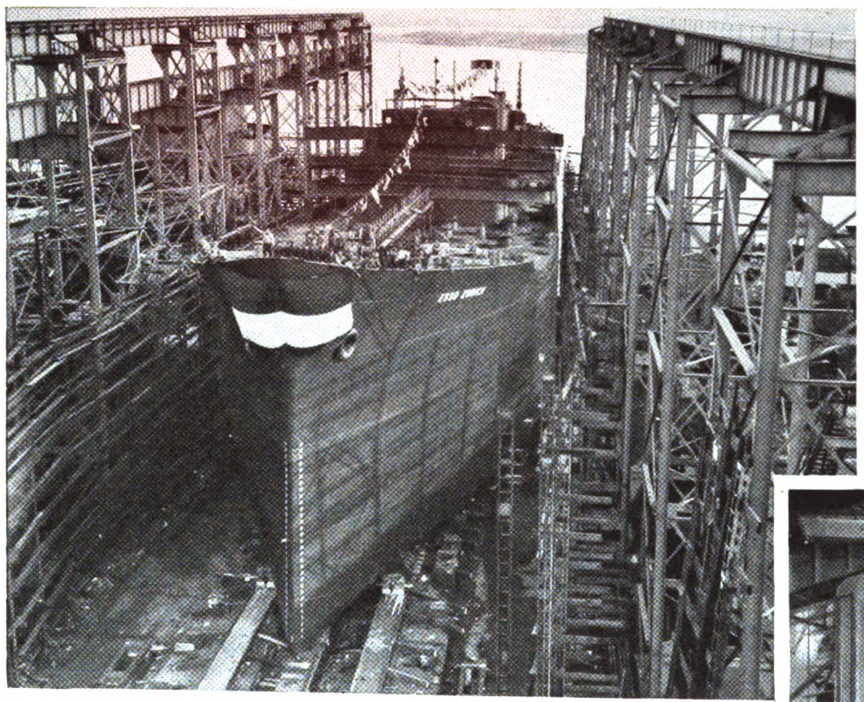
BUSCH-SULZER A DIVISION OF NORDBERG

NORDBERG DIESEL ENGINES

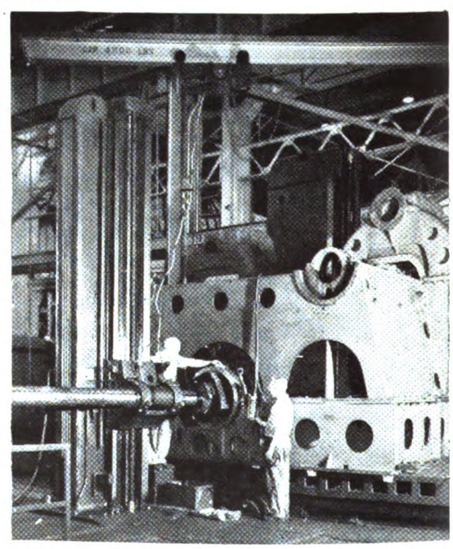
NORDBERG MACHINERY

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SUN SHIP LAUNCHES NEW 26,555-TONNER



A new era in marine transportation begins with the launching of the SS *Esso Zurich*, built to the design of and for the Standard Oil Company (New Jersey), by the Sun Shipbuilding & Dry Dock Company at Chester, Pa. First of the new super-tankers now coming off the ways, she is faster (speed 16 knots), larger (dead weight 26,555 tons), longer (length 628 feet), and holds 65 per cent more oil (capacity 230,000 barrels) than the well known U.S.M.C. T2-SE-A1 tankers. Like many others of her class now under construction, she is propelled by a General Electric geared-turbine drive of new design. Generators, motors, control and switchboards were also supplied by General Electric.



Accurate machining assures close tolerances, as in this boring operation on the main bearing of the reduction-gear assembly. The General Electric turbine which drives the reduction gears consists of one high-pressure unit and one low-pressure unit, provides high thermal efficiency. The high-pressure unit handles incoming steam at 835 pounds gage pressure and 840 degrees F., highest ever used in merchant ships.

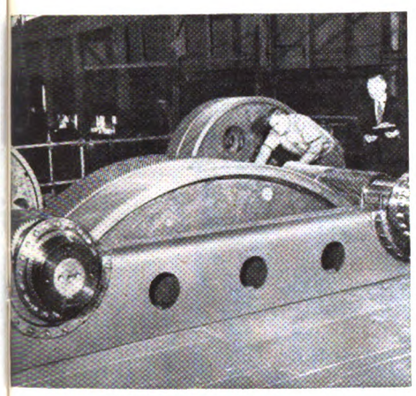
PROPULSION DRIVES
DIESEL-ELECTRIC
TURBINE-ELECTRIC
GEARED-TURBINE
MARINE AUXILIARIES
and
KEEP 'EM SAILING SERVICE

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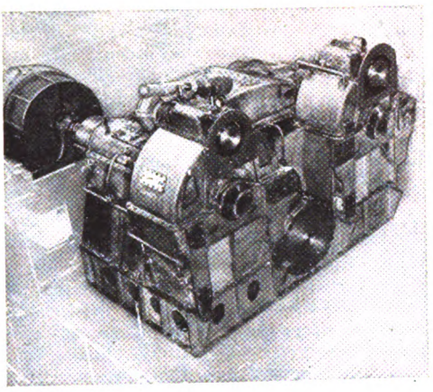
FIRST SUPER-TANKER;

HAULS 65% MORE OIL

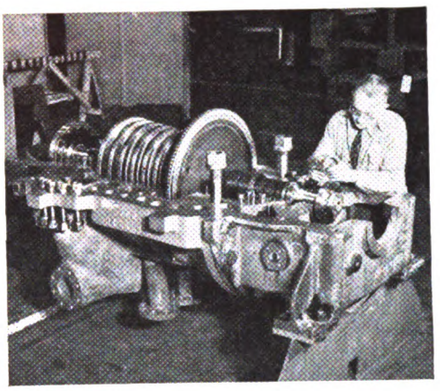
General Electric equipped SS *Esso Zurich* leads parade of giants having 230,000 barrel capacity in new building program. G-E geared-turbine propulsion drive of new high-pressure design supplies 12,500-hp, boosts power-plant efficiency, gives 16-knot speed.



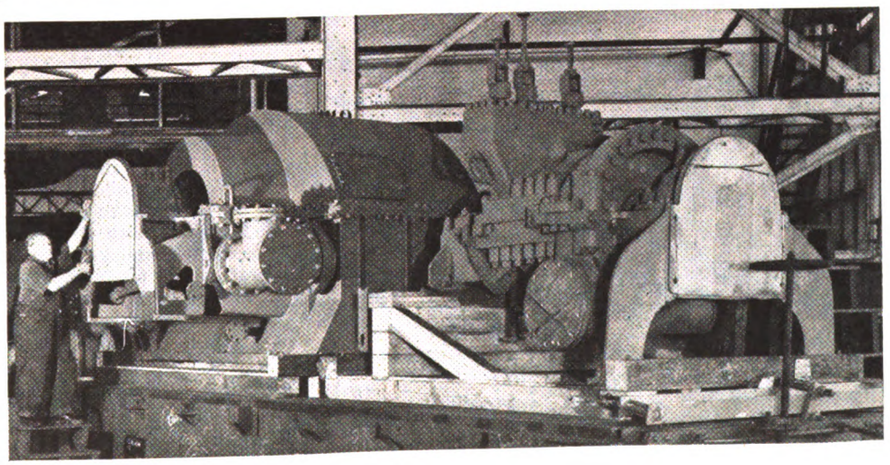
The low-speed gear, the low-speed pinions, and the high-speed gears are carefully examined before test operations begin. With the precision of fine clockwork, all large propulsion gears are cut on hobbing machines with accuracy greater than 1/1000 inch—even though in this equipment the bull gear alone is 13½ feet in diameter!



To provide ample assurance of dependable performance at sea, the gear assembly is checked on a test base at the General Electric Lynn River Works. A geared-turbine drive has minimum weight per horsepower produced, and provides high over-all economy because fuel consumption and maintenance cost is low.



Over-all efficiency of the power plant has been increased through: 1) optimum boiler feed-water temperatures, 2) reduced throttling losses, 3) improved turbine design and efficiency, and 4) reduced heat loss in the condenser overboard discharge. Here, a workman installs a bearing in the high-pressure unit of the G-E turbine.



Here are the completed high-pressure and low-pressure units just before being shipped for installation on the SS *Esso Zurich*. Propulsion equipment for more than a third of the large oil tankers now under construction or contract in the United States are being supplied by General Electric, as well as sixteen 400-kw turbine generators for ship's service. See your G-E representative for detailed information on marine propulsion and auxiliaries. *Apparatus Department, General Electric Company, Schenectady 5, New York.*

GENERAL ELECTRIC

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IN TRANSPORTATION:

Our original need was ships to move our bananas. Soon it became apparent that the fleet could offer a wider service to the Americas. Today, the Great White Fleet, especially designed for the Caribbean trade, carries thousands of passengers every year between the Americas. Diplomats, educators, industrialists, and vacationists travel on these ships. Thus, with each succeeding year, more and more of the travel public learns more and more about the Americas.



IN MEDICAL SCIENCE:

As workers first cleared jungle swamps along the Caribbean, our medical staffs moved in to battle malaria and yellow fever—to protect the workers' health—and to create sanitary areas of population. This, too, became a public service. ★ ★ ★ Today, United Fruit's medical organization embraces 13 hospitals, 106 dispensaries, 9 domestic medical centers—has a staff of 1,802. In the past year, our facilities and services were available to 200,000 citizens of the Middle American Republics. Significant research contributions have also been made in the field of tropical medicine.



IN COMMUNICATIONS:

As early as 1904, when radio was in its infancy, instantaneous contact between markets, plantations and ships became vital. Therefore, we developed an internal communications system. Inevitably, this system was destined to serve the public interest and, accordingly, the Tropical Radio Telegraph Company was organized. ★ ★ ★ Today, TRT owns or has affiliations with 40 radio-telegraph stations, in addition to those aboard our Great White Fleet, and plays an integral part in trade and cultural relations throughout the Western World.

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SHELL RESEARCH develops in ONE oil qualities which meet any combination of these conditions:

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3. EXTREME HEAVY LOADS
4. LOW-GRADE FUELS
5. HIGH RATE OF ENGINE WEAR



We want to tell you more about new Shell Rimula Oil

Call the Shell lubrication Engineer—he will gladly advise you on any of your engine lubrication problems.

For informative literature, write Shell Oil Company, Incorporated, 100 Bush Street, San Francisco 6, California.

These conditions demanded this new oil:

Engines, particularly Diesels, seldom encounter *ideal* operating conditions. Low-grade fuels...wide variations in load . . . long periods of light-load operation . . . subnormal jacket temperatures . all are too-common conditions heretofore associated with high maintenance costs and short engine life.

You run into such trouble on many construction jobs, in pumping installations, in standby service and in marine auxiliary units . . . to name just a few. And . . . highly supercharged Diesels frequently magnify the effects of extreme operating conditions.

Shell Research scientists regarded the situation as a challenge, and went to work on an entirely new concept of engine lubrication. The result is Shell Rimula Oil . . . the *first* engine lubricant to effectively counteract high wear under *both* extremes —heavy and light loads . . . and the *first* to permit operation *without penalty* on low-grade fuels.

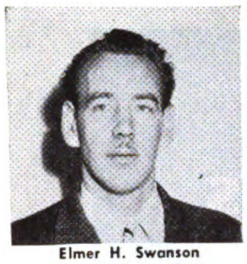
Shell Rimula Oil combines the above qualities with full detergent-dispersant action that keeps valves and rings free . . . reduces lacquer and carbon deposits to the point of harmlessness.

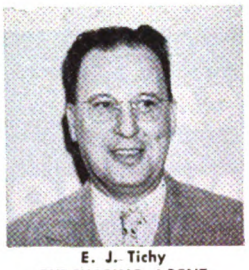
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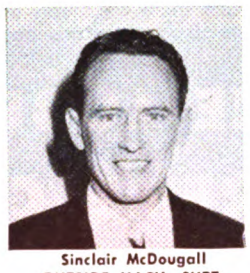
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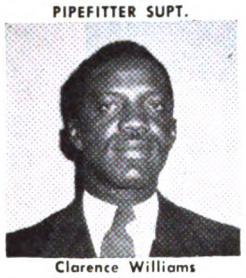

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GENERAL SUPT.

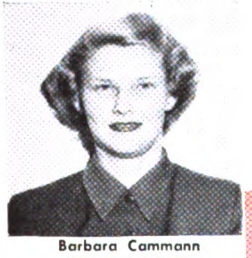

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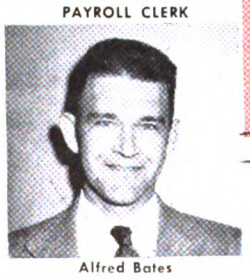

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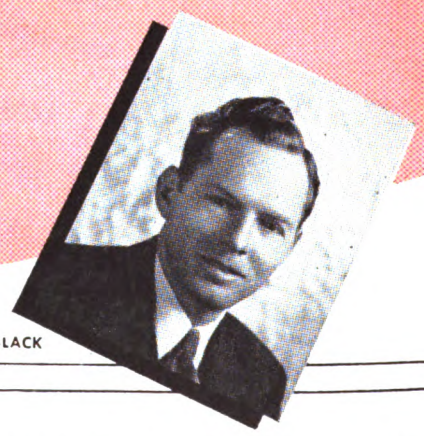
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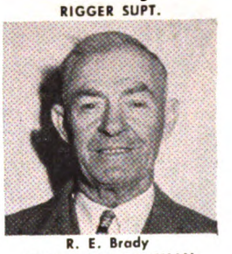
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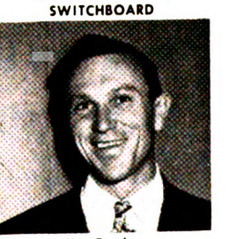


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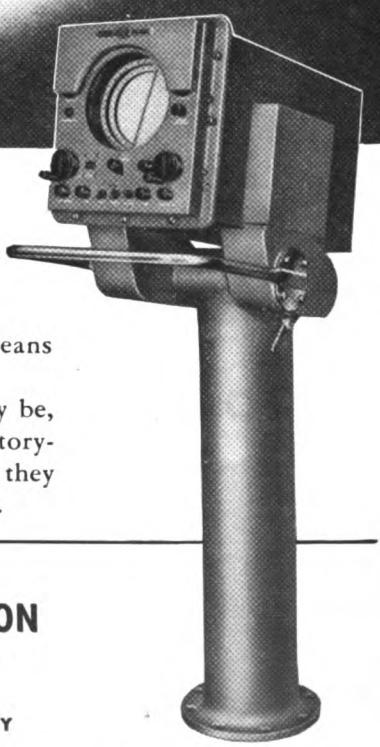
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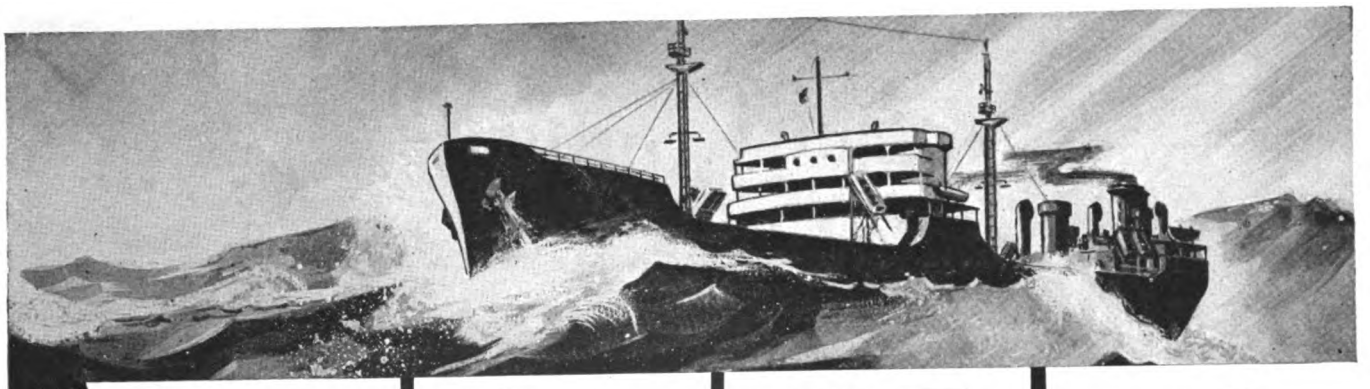
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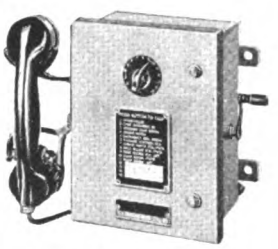
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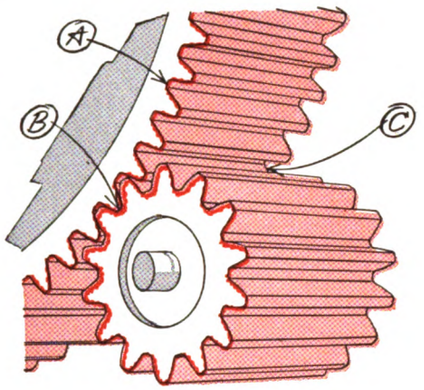
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LOW-SPEED OPEN GEARS

Extremely heavy shock loads on an open bull gear did not displace the tough lubricating film maintained by Calol Pinion Grease. Recommended for all heavy-duty open gears such as those on hoisting units, cranes, power shovels, and some grease-lubricated enclosed gears. Comes in four grades, each increasingly more adhesive: Nos. 0, 1, 2, 5.

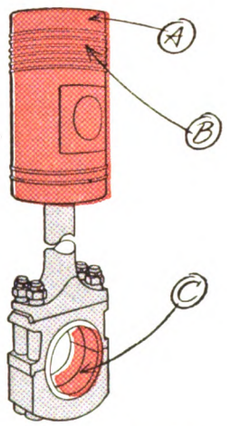
A. Sticks tight wherever applied — prevents excessive waste especially where gears move very slowly or are idle part of the time.

B. Cushions and lubricates — takes up slack between teeth and increases gear efficiency.

C. Very high viscosity but with oil-like consistency — flows back into place after being displaced by gear teeth.

Calol Pinion Grease is fully water-resistant. This assures lubrication on gears operating outdoors in wet weather or in other heavy moisture conditions.

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Many ship operators have proved that Calol Marine Oil reduces lubricating costs, prevents excessive friction and wear and maintains tight seals in large Diesel propulsion engines. Recommended for all marine Diesels where an uncompounded oil is satisfactory. Comes in five grades: 55, 65, 75, 90, 120 — SAE 20 to SAE 60.

A. Has high viscosity index — resists highest operating temperatures and minimizes gum formation.

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Because of its high resistance to oxidation, non-corrosive and lubricating qualities, Calol Marine Oil is also used in enclosed reduction gears.

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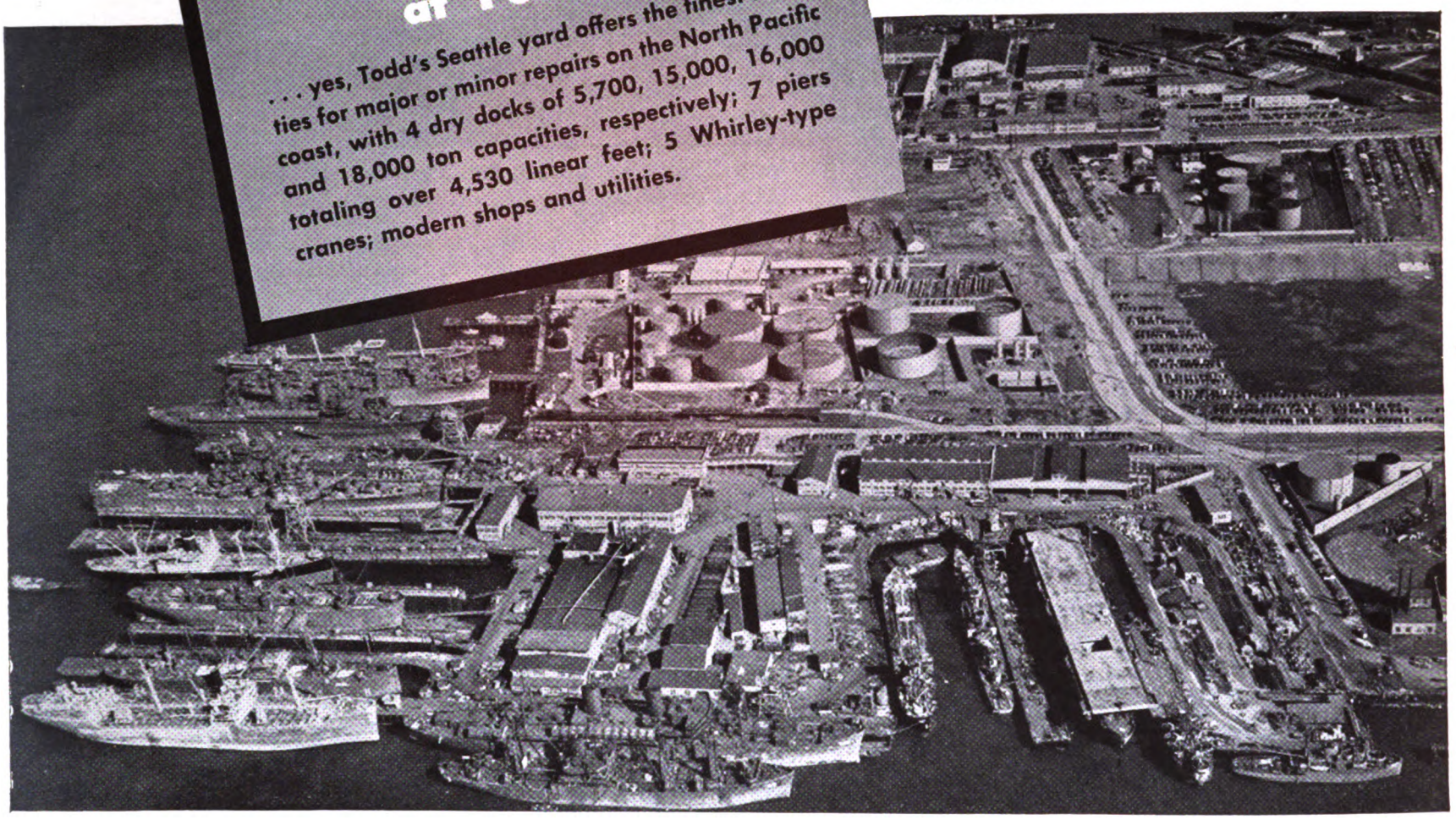
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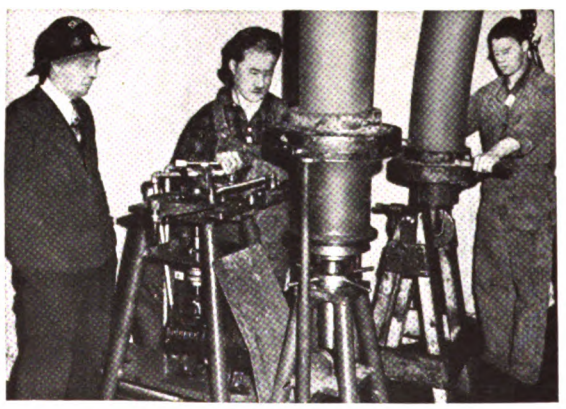
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• View of the shipyard, located on northwest point of Harbor Island, close to 2 principal anchorages in Elliott Bay, Seattle's Harbor and connected by sidings to nearby tracks of the Northern Pacific.

Swift, expert service for vessels of every type and size is available to operators today at any one of Todd's major shipyards, strategically placed around our country's Atlantic, Gulf and Pacific coasts. No job is too small or too large for Todd to handle for you, from the repair or replacement of minor fittings and routine voyage overhaul to major structural work. A skilled staff of naval architects, marine engineers and other specialists is available—ready to work alone or with your consultants. The newest time and money saving machines and techniques are regularly employed. *In addition, all Todd shipyards provide mobile service, at anchor or at dockside.*



• The "lapping" machine (left), invented in a Todd, Seattle plant, saves up to 50% of time needed by old method (right) of "lapping" high pressure steam pipes of 1" to 9" diameter.

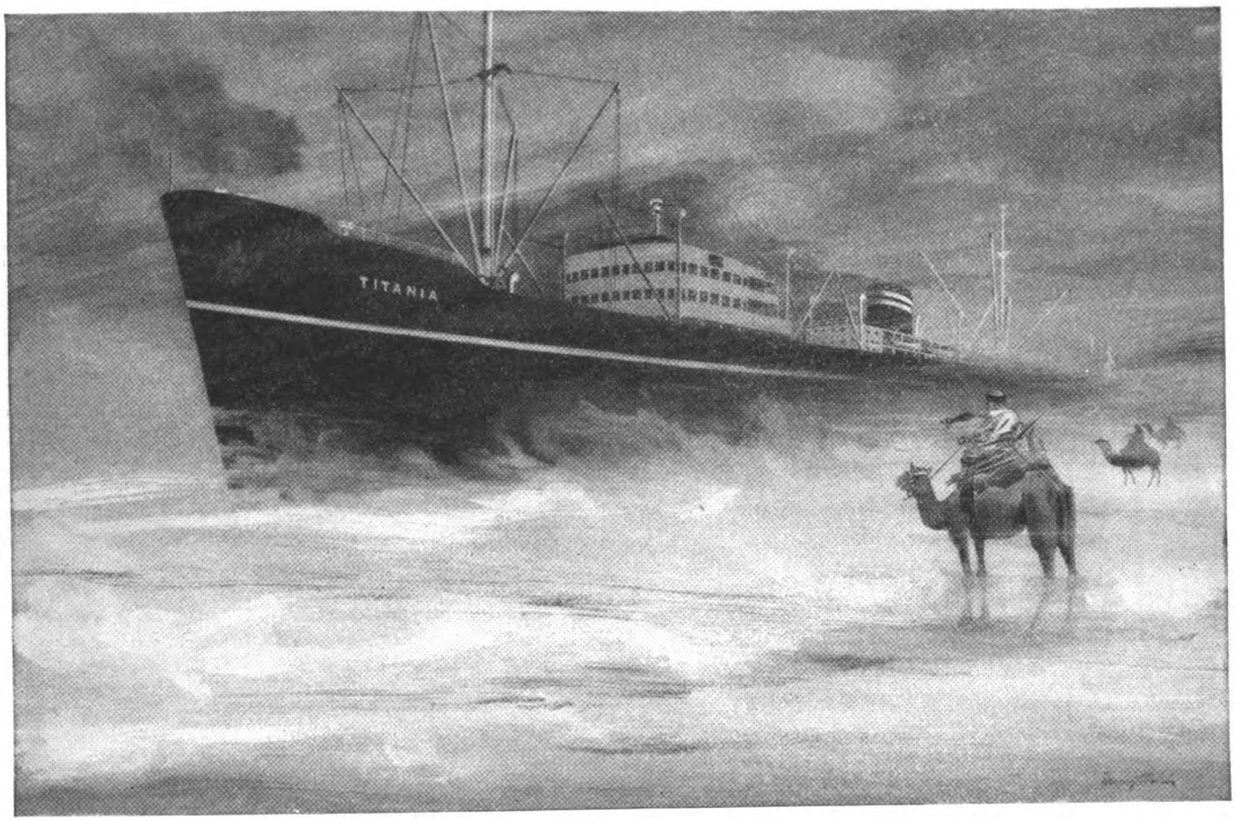
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Cargo liner navigates "Gate of Hell" in raging sand storm with SPERRY RADAR showing Captain every sand-hidden ship

■ Captain Even Bruun-Evensen of the MS TITANIA discovered on a Red Sea voyage that Sperry Radar makes navigation safer in a sand storm as well as in fog, rain or black of night.

■ "Abreast of Mocca to Aden on the Red Sea, we ran into trouble," said the master of the Wilhelmsen Line's cargo liner, TITANIA. "Navigating the Bab El Mandeb Strait — commonly known as the 'Gate of Hell'— we ran into a heavy sand storm. The sand was blowing so thick I couldn't even see my foremast. I decided to try my radar and to my complete surprise I could see every ship through the sand and was able to navigate around Perim Island to Aden."



■ On the Yokohama to San Pedro run, Captain Bruun-Evensen estimated he saved a day and a half through the use of radar. And on a trip into Capetown he saw the harbor full of lights. He turned on his radar and was astonished to find the scope showing the harbor "full of ships" and decided "something's wrong here, I'll wait for daylight before I enter."

■ "In the morning I found radar had given a true picture," he said. "There were five whaling factory ships, each with a dozen or more whale catchers which completely cluttered the harbor."

■ The Titania's experience is another indication that Sperry Radar complements the skill of pilot and shipmaster in open or closed waters . . . in fog, storm or unusual sailing situations with its sharp, clear scope images. Our nearest District Office will be glad to give complete information.

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THE DOMINICAN REPUBLIC . . . is largely agricultural, sugar cane being one of its principal crops. Other products exported by the island to pay for imports are cocoa beans, bananas, tobacco, avocados, rice and coffee. In the cities, ultra-modern architecture contrasts vividly with old Spanish buildings that date back to Christopher Columbus.

A sweet market in lovely lands

Visitors to the Caribbean are enchanted by the after-glow of civilizations that flourished on Inca gold, privateering, sugar and rum. But at port after port, they're impressed, too, by the modern buildings and facilities encountered. For the Caribbean is a blending of tropical romanticism with a thriving market for American products; bought by selling us sugar, ores, petroleum and other raw materials America needs. Write today for market data and travel information.

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ALCOA STEAMSHIP COMPANY, INC.

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Four Years



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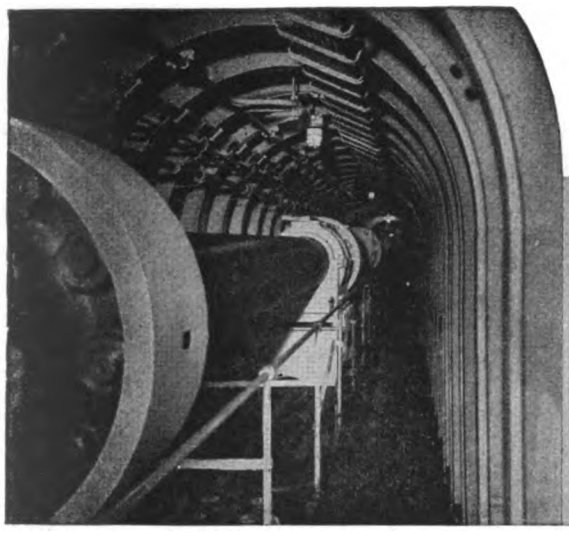
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SHAFT ALLEY Chatter

Pittsburgh Steamship Announces New Appointments

Loran F. Hammett has been appointed assistant to vice president—operations of the Pittsburgh Steamship Company. A. S. Thaeler has been named assistant to vice president-engineering of this ore carrying subsidiary of United States Steel Corporation.

Mr. Hammett has been associated with Pittsburgh Steamship since 1938 when he was hired as a clerk in the traffic department. In April, 1941, he was made assistant dispatcher and in April, 1948, he was transferred to the office of assistant to the president.

Mr. Thaeler joined the Federal Shipbuilding and Dry Dock Company in 1923 as an engineer. He advanced to the post of assistant chief engineer of that company in 1923 and later became acting chief engineer. Since July, 1948, he has been associated with the Pittsburgh Steamship Company as assistant marine engineer.

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New Orleans Propeller Club Elects Schlesinger President

The Propeller Club, Port of New Orleans, elected new officers with E. A. Schlesinger, executive vice president of the Gulf Engineering Co., Inc. as president succeeding Harry X. Kelly, vice president of Mississippi Shipping Co.

Other officers elected were Terence J. Smith, first vice president; Tom Burke, second vice president; S. M. Lecourt, secretary, Sam Giallanza, treasurer, and Lieutenant Commander J. H. Bull. A. E. Champeau, Captain Ollie W. Davis, Larry Guerin, Harold S. Meighan, Fred W. Moller, Captain J. A. Rice, J. W. Richards and Fred J. Schuber, members of the Board of Governors.

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Vice Admiral Mills Joins Foster Wheeler Corporation

Vice Admiral Earle W. Mills, USN (ret.), at a directors' meeting of the Foster Wheeler Corporation was elected executive vice president and a director, it was announced by Harry S. Brown, president and chairman.

Wartime deputy chief of the Bureau of Ships, Navy Department, and chief of that bureau since 1946, Admiral Mills recently retired from the Navy. He brings to Foster Wheeler a wealth of administrative and technical experience.

Born in Little Rock, Arkansas, Admiral Mills graduated from the U.S. Naval Academy in 1917 and received his degree as Master of Science in Naval Engineering from Columbia University in 1924. He was awarded the honorary degree of Doctor of Engineering by the University of Louisville in 1944.

At the same meeting David McCulloch, formerly executive vice president, was named vice chairman of the board. Mr. McCulloch joined the Power Specialty Company, later to become part of Foster Wheeler Corporation, in 1906. He has served as executive vice president since 1935.

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Avondale Appoints H. Z. Carter General Manager

James H. Bull, president of Avondale Marine Ways, Inc., has announced the appointment of Henry Z. Carter as general manager of this New Orleans' shipyard.

Previous to joining Avondale, Mr. Carter served many years with the Federal Government and the U.S. Maritime Commission in the capacity of general auditor, in charge of the construction audits throughout the United States. It was while in this capacity that Avondale, much impressed by Mr. Carter's administrative abilities in the marine field, secured his services approximately two years ago as comptroller.

NEW PRESIDENT of the Propeller Club, Port of New Orleans . . . E. A. SCHLESINGER, Executive Vice President of Gulf Engineering Co., Inc.



VICE ADMIRAL EARLE W. MILLS, USN (ret.) recently elected Executive Vice President and a Director of the Foster Wheeler Corporation.



HENRY Z. CARTER, General Manager of Avondale Marine Ways, Inc., New Orleans.



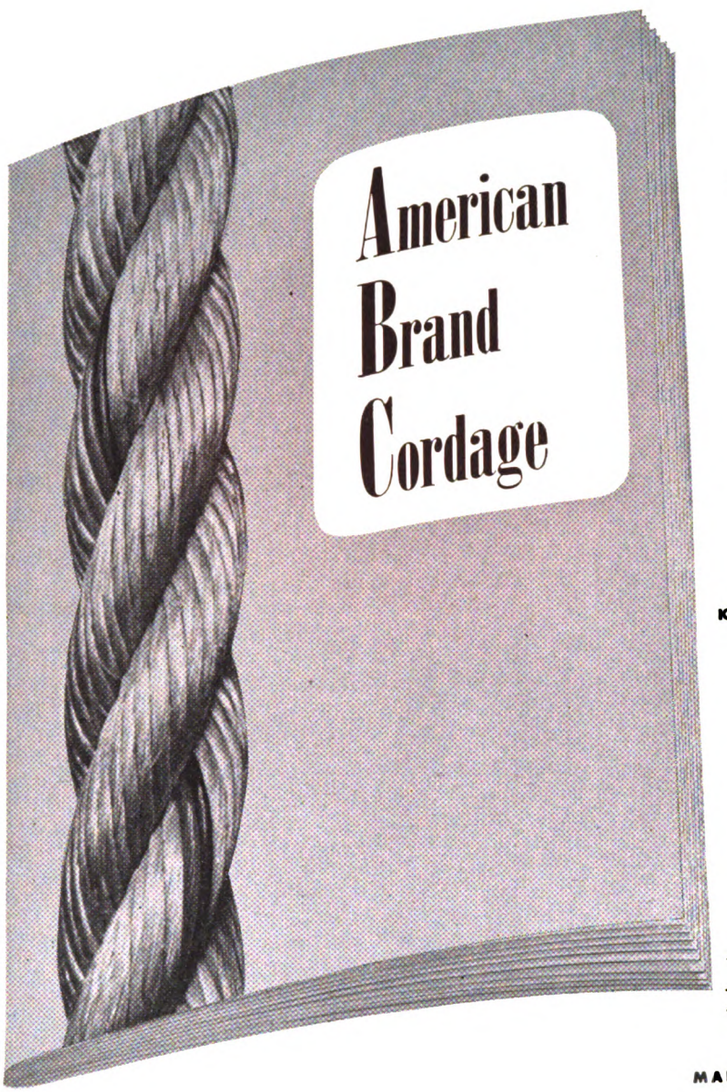
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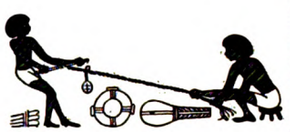




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SHAFT ALLEY (continued) Chatter



H. H. (Dutch) PIERSON, well-known Pacific Coast steamship man, who has been named district manager of the Los Angeles-Long Beach area for the Coastwise Line, succeeding A. E. Gardner, who goes to Anchorage as Alaska manager for the line. D. J. Seid, formerly in Alaska, has returned to company headquarters in San Francisco.

Largest Passenger Ship In More Than 10 Years Started at Quincy Yard

The keel for the largest and fastest American passenger ship ordered in this country in more than a decade was laid March 29 in Bethlehem Steel Company's Quincy, Massachusetts shipyard.

The keel for the ss INDEPENDENCE, the first of two express liners which will be built by Bethlehem for the American Export Lines at a contract price of $46,800,000. Keel for the second vessel, named the ss CONSTITUTION, will be laid around July 1. Both ships are scheduled to be delivered before the close of next year, and it is estimated that they will represent an overall investment of approximately $50,000,000 when completed.

Carry 1,000 Passengers Each

The first fully air-conditioned big liners ever to be built, these vessels will operate in American Export Lines' Mediterranean express service between New York, Naples and Genoa on a schedule which calls for 15 round trips each per year. When the vessels are completed, they will give American Export Lines six air-conditioned passenger ships in the Mediterranean service.

The new liners will have accommodations for approximately 1,000 passengers each and will add about 60,000 yearly berth capacity to transatlantic travel facilities. They each will carry a crew of about 550, all American citizens, in the most spacious and best equipped quarters yet designed for seamen.

Estimated at 20,000 gross tons and 30,000 displacement tons each, the vessels have an overall length of 683 feet, breadth of 89 feet and draft of 30 feet. They will be the largest passenger ships built in this country since the ss AMERICA was delivered almost a decade ago. With a rated speed of plus 25 knots, they will be the fastest large passenger ships ever constructed in the United States. They have a cruising range of 22,000 miles.

Embodying modern styling and streamlining, with raked stems, masts and funnels, the sister-ships are expected to establish new standards of excellence and safety in ocean travel. The ships were designed by Bethlehem Steel Company's technical staff with the cooperation of Export Lines.

Defense Features

The INDEPENDENCE and the CONSTITUTION will have important defense features despite the fact that they are scheduled to be ultra-modern in every detail. If necessary, these ships can be converted into the fastest big troopships under American command. As transports, they could carry 5,000 troops each.

Based on Private Initiative

Admiral Smith, in a brief address, said that the keel laying marked the launching of a shipbuilding program based solidly on private enterprise. These vessels, he said, were the outcome of teamwork between the government and shipping companies having the foresight and initiative to take the lead in sailing a fleet of ships to carry America's share of the world trade.

Mr. Slater said the vessels will mark a "new era for Export, for right or for wrong, for better or for worse." Officials of the company, he added, had experienced many "anxious hours" in drawing up the contracts and had engaged in much "soul searching" before reaching a decision as to whether a company like Export, which has heretofore concentrated on freight, should enter the passenger field to the extent of two express liners in addition to the "4 Aces."

Mr. Strohmeier praised the American Export Lines for its "initiative" and "perserverance" and said that the contract for the building of the INDEPENDENCE and CONSTITUTION broke the bottleneck which had been thwarting America's postwar passenger shipbuilding program.

He said the building of the two liners would provide work for 2,500 men in the yard alone for a period of two years, and that ten to twelve million manhours would be required for the construction work alone. Materials for these ships, he pointed out, will come from every state in the Union, providing jobs throughout the country.

John T. Wiseman, general manager of Bethlehem's Boston District shipyards, acted as master of ceremonies. American Export Lines officials present at the ceremony included John F. Gehan, J. E. Bailey, John MacGowan, L. S. Andrews, Herbert Mann, C. J. Kinney, B. A. Robison, Chester D. Leslie, A. F. Kearney, C. H. Case, E. A. Waldron, Frank I. Henderson, C. W. Kalloch, William Dausey, and Captain Sidney Blackledge.

Bethlehem officials included Sam Wakeman, manager of the Quincy Yard, J. E. Burkhardt, technical manager, and W. W. Watson, manager of construction.

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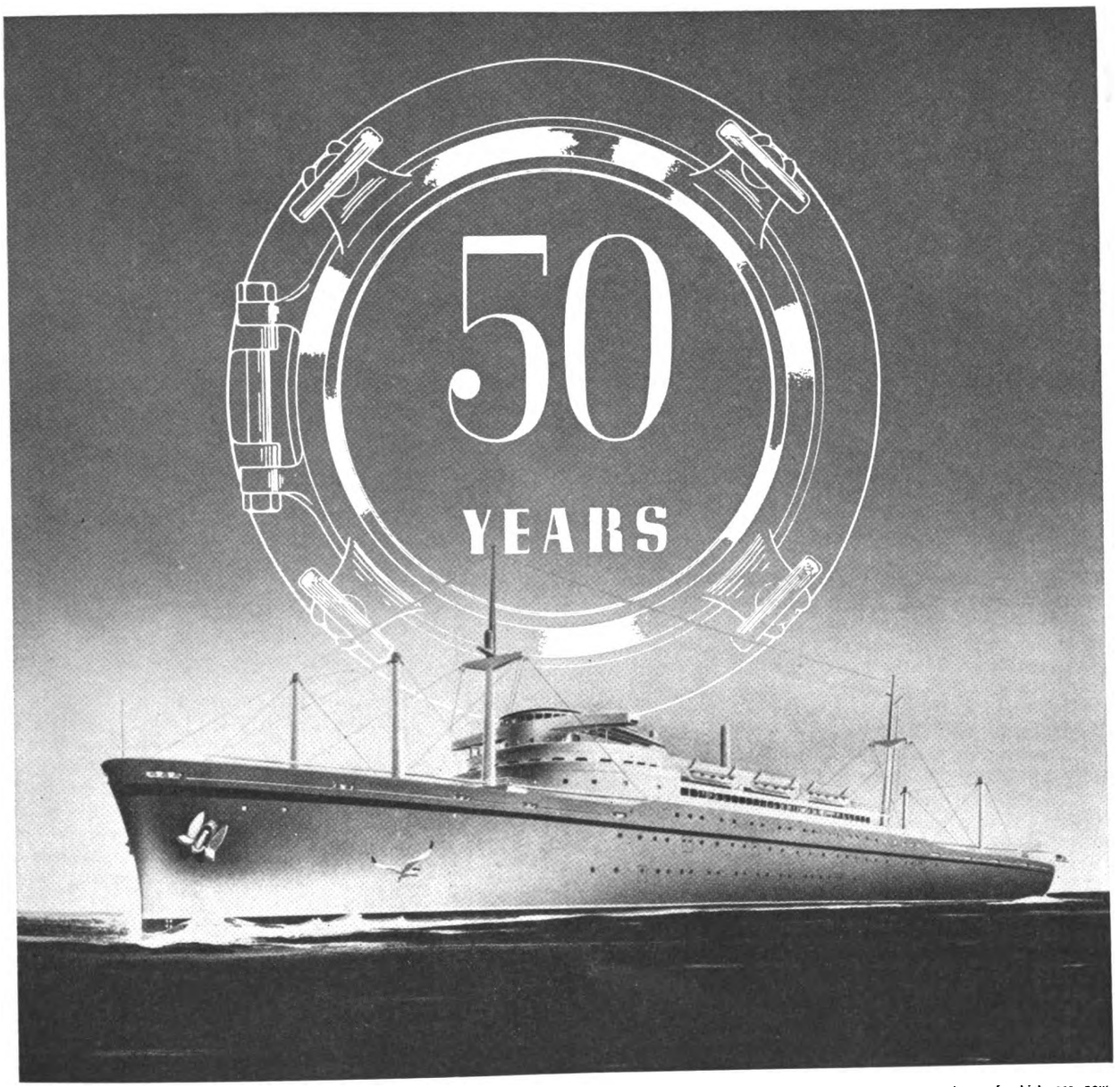
Bethlehem Steel Company's Shipbuilding Division completed and delivered 59 seagoing vessels and lesser craft in 1948 compared with 22 in 1947, while repairs and conversions numbered 4,796 against 3,523 in the preceding year.

AT THE KEEL LAYING of the first of American Export Lines two new passenger liners, JOHN E. SLATER, Executive Vice President, announces the first will be named the SS INDEPENDENCE and the second the SS CONSTITUTION. The keel laying ceremony was held March 29th at the Bethlehem Steel Company's Quincy, Mass., shipyard, less than an hour after the formal signing of the contracts.

Also in the picture, besides Mr. Slater at the microphone are: L. S. ANDREWS, Operating Manager, American Export Lines (below the sign at the left); Vice Admiral W. W. SMITH, Chairman, U. S. Maritime Commission (below the loud speaker); D. D. STROHMEIER, Vice President, Bethlehem Steel Co., Shipbuilding Division (in light coat next to Admiral Smith); JOHN F. GEHAN, Vice President, American Export Lines (next to Mr. Strohmeier); and ARTHUR FLETCHER, sales executive, Bethlehem Shipbuilding Division (right foreground).



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Latest Passenger-Cargo liner, three of which are now under construction for American President Lines.

HALF A CENTURY OF *Progress*



From the laying of the keel of Contract No. 1, at the turn of the century, to the start of the latest passenger-cargo liner in 1949, NEW YORK SHIP has spanned and played a major part in a period of tremendous progress in ship design and construction.

Today, NEW YORK SHIP maintains unsurpassed facilities for the design and construction of vessels of any size and type. An experienced staff, together with a fully-equipped and modern plant, make possible the single responsibility of one company for an entire vessel.

NEW YORK SHIPBUILDING CORPORATION

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SHAFT ALLEY (continued) Chatter

Executive Personnel Appointments at APL

Upon his return from the East Coast for the keel laying ceremony of American President Lines' new Round-the-World liner, PRESIDENT JACKSON, George Killion, president of the company, announced that Rear Admiral Charles Lees Brand, USN (ret.) will become APL's resident representative for new construction at the Camden, New Jersey, yards of New York Shipbuilding Corporation, where APL's three new V-2000s are under construction.

Admiral Brand was assistant chief of the Bureau of ships, in charge of shipbuilding and design, and general inspector of ships.

Mr. Killion said that Commodore George T. Paine, who joined the company earlier this year as general engineering superintendent, had been assigned additional duties and responsibilities which will require more of his time at San Francisco headquarters.

Admiral Brand has an enviable record with the Navy. As Director, Shipbuilding Division, Bureau of Ships, Navy Department, Washington, D.C., he was responsible for the design and construction of all vessels built, or acquired, for the U.S. Navy and allotted, under Lend-Lease, to the allied powers. These programs covered over 15,000,000 displacement tons of vessels—at an expenditure of over $24,000,000,000.

A veteran of both World Wars, he holds the Distinguished Service Medal, the World War I and II Victory Medals, the American Defense Service Medal and the American Campaign Area Medal. He graduated from the U. S. Naval Academy in 1910, finishing sixth in a class of 132.

President George Killion also announced a number of executive personnel changes in the organization following a meeting of the new Board of Directors, which had just been elected at the annual meeting of stockholders.

As to the Board itself, President Killion announced that Edgar M. Wilson, APL's Vice President at Los Angeles, had been elected as a management member, succeeding E. Russell Lutz.

Mr. Killion further announced that John M. Diggs, a veteran of 25 years service in promoting passenger travel for the Cunard White Star Line, was joining American President Lines as vice president in charge of passenger traffic. He succeeds Hugh Mackenzie, who is retiring from active duty, but will continue with the Company in a consulting capacity.

A. A. Alexander, APL's general manager at New York has been elected vice president, in charge of the Eastern Division, with headquarters in New York.

Charles H. Speights, formerly general agent at Cleveland and more recently assigned to New York, has been appointed assistant vice president, Eastern Division.

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Perkes Navigation Establish Offices in San Francisco

Perkes Navigation Company, Inc., has established offices at 260 California Street, San Francisco, to act as agent in that city for Transmarine Navigation Corp., Los Angeles, and James Griffiths & Sons, Seattle. Previously the Blue Star Line represented Transmarine, and Pacific Far East Line handled the Griffiths account there. The Transmarine and Griffiths companies will represent the Perkes Company in Southern California and Puget Sound, respectively.

Perkes Navigation is headed by Charles A. Perkes, president, formerly Pacific Coast manager for Parry Navigation Co. and C. F. Lester, executive vice president, who was with Continental Carriers, New York.

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General Steamship Corp. have appointed Stanley A. Page as passenger traffic manager of the company, succeeding Herbert P. Wynn, who recently resigned this position to become general passenger agent of the Delta Line, Mississippi Shipping Co., New Orleans.

FLOWERS AND FUN at a party held by Commercial Ship Repair, Inc., last month to celebrate the opening of its fine new plant at 1401 Illinois Street, San Francisco. Top row, left to right: CAPT. AND MRS. E. W. NYSTROM and CAPTAIN DEXTER G. FLINT, beneath a floral horseshoe presented by the Western Asbestos Co., and MR. AND MRS. J. G. KELLY. Captain Nystrom is a marine cargo surveyor, Captain Flint is port captain for the Coastwise Line and Mr. Kelly is superintending engineer for W. R. Chamberlin & Co. The floral anchor was aptly given by Anchor Equipment Co.

Bottom row: left to right: Marine merrymakers in the spacious lobby. Commercial Ship's offices are up the stairs. Right: BILL MANUEL, Maritime Commission; CHARLES I. JACKSON, Jaxon Engineering Specialties; MISS BARBARA WATSON, California Manager of the American Mail Line; MIKE TORCHIA, Maritime Commission; MRS. L. A. DEPPMAN, wife of the Superintending Engineer of Sudden & Christenson, and EDDIE BLACK, co-owner of Commercial Ship.



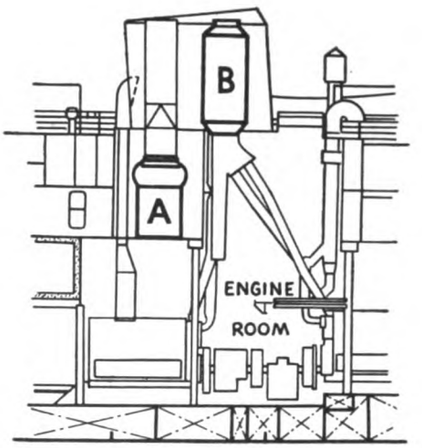




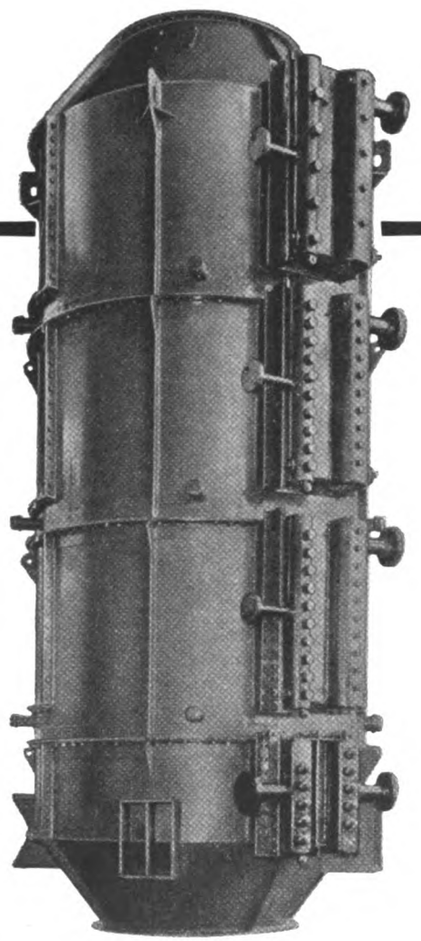


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C-E supplies steam for Diesel Ships



Starboard profile of engine and boiler room of French Diesel ships, showing arrangement of (A) CE Oil-fired Boiler and (B) C-E Waste Heat Boiler in uptake.



C-E Forced Circulation Waste Heat Boiler suitable for use with Diesel engines of 2000-2500 brake hp and up. Available with or without superheater section as desired.

An exceptionally economical and convenient source of auxiliary steam aboard Diesel powered ships is provided by the C-E Forced Circulation Waste Heat Boiler. Utilizing the exhaust of the Diesel engines, (from 2000-2500 brake hp up), this boiler supplies the steam for turbo-generators, evaporators, fuel pumps and other auxiliaries, as well as for galley and heating purposes. For port and emergency use, or for additional steam needs, C-E oil-fired standby boilers are available. The waste heat boiler may be connected to the drum of the standby boiler so that it is held at steaming temperature or may have its own drum if desired.

The waste heat unit pictured at the left is now in service on all six of the new ships recently built for the French Government by the Tampa Shipbuilding Company, Inc. A simple diagram of the overall arrangement is shown. The waste heat boiler, (B), is divided, in this instance, into three generating sections, each controlled by manually operated valves to provide flexibility of output. Where desired, these valves can be operated automatically. The oil-fired unit, (A), cuts in or out through automatic controls as required. Both units are provided with superheater surface.

In addition to its complete line of natural circulation boilers, Combustion is prepared to offer controlled forced circulation designs for main boiler units as well as the waste heat and auxiliary types mentioned above. Our engineers will welcome the opportunity to consult with you at any time. B-302

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Combustion Engineering—Superheater, Inc.

A Merger of COMBUSTION ENGINEERING COMPANY, INC. and THE SUPERHEATER COMPANY

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SHAFT ALLEY (continued) Chatter



FROM THE EAST COAST TO THE WEST COAST TO CELEBRATE MARITIME DAY . . . Guest speaker for Maritime Day dinners at Portland, Tacoma, Seattle and Los Angeles is LOUIS B. PATE, New York, Vice President of the Robin Line and National President of The Propeller Club of the United States.

West Coast Plans Maritime Day Celebrations

Two prominent Atlantic seaboard marine men will be speakers at Pacific Coast gatherings celebrating National Maritime Day May 22.

One is Louis B. Pate, New York, vice president of the Robin Line and national president of The Propeller Club of the United States, who will speak at Maritime Day dinners at Portland May 19, Tacoma May 20, Seattle May 21st and Los Angeles May 23.

The other is David J. Coddaire, newest member of the United States Maritime Commission, who will talk at San Francisco before an expected gathering of 600 at that city's annual Maritime Day luncheon, a feature of a three-day celebration. Mr. Coddaire is an attorney of Haverill, Massachusetts.

D. N. Lillevand, vice president of the Grace Line, is general chairman of San Francisco's Maritime Day committee, and vice chairman is A. W. Gatov, president of the Pacific-American Steamship Association. The program includes a street parade and the annual Spring Frolic of the Mariners Club of California.

Mr. Pate, accompanied by his wife, will arrive at San Francisco in time to attend the Spring Meeting there May 11 and 12 of The Society of Naval Architects and Marine Engineers. He will be the guest of the San Francisco Propeller Club at a reception May 16.

Geo. Charlton Elected Secty. of Merchant Marine Committee

The appointment of George C. Charlton, as secretary of the Merchant Marine Committee of the Whole, was announced by Frank J. Taylor, chairman.

The Committee is comprised of representatives of the American Merchant Marine Institute, Association of American Ship Owners, Ship Operators' and Owners' Association, Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast. The Merchant Marine Committee of the Whole represents these associations in negotiations with the Maritime Commission arising out of chartering and agency problems of mutual interest.

Mr. Charlton has a background of twenty-five years in the shipping industry, and during the late war served with the War Shipping Administration and Maritime Commission.

Headquarters of the Committee have been established at 11 Broadway, New York City.

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Lykes Bros. Official Receives Decoration from French Govt.

A. C. Kerr, general vice president of Lykes Bros. Steamship Co., Inc., with headquarters in London, England, has been decorated by France for "eminent services rendered to the French Government."

Mr. Kerr's latest decoration is the Knight's Cross of the Legion of Honor. The diploma of Knighthood was presented to Mr. Kerr in London by the French Ambassador to the Court of St. James. The actual decoration ceremonies were held recently in Paris, France.

Argentine Fruit Now Arriving On Moore-McCormack Vessels

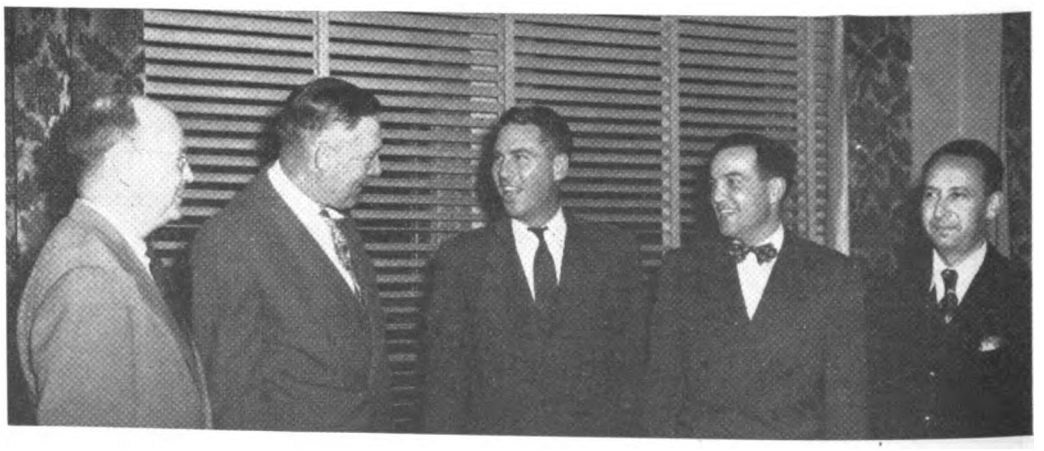
The Moore-McCormack Lines cargo liner MORMACISLE arrived in New York recently from Buenos Aires carrying the largest cargo of Argentine pears, plums and grapes ever to come to the United States under conditions of new "intransit sterilization." This project was undertaken jointly by Moore-McCormack Lines and the United States Department of Agriculture, and details of it were announced after the 18,235 cases of pears, 2,248 cases of grapes and 2,245 cases of plums had been sold by the New York Fruit Auction Company at the Erie Railroad produce terminal, Pier 21, North River, at excellent prices that ranged up to $8 per case for the pears. Prominent members of the fruit trade described the shipment as one of the best of its kind they had ever seen.

The United States Department of Agriculture Bureau of Entymology and Plant Quarantine was represented at the pier during the unloading by Dr. Randall Latta, assistant Chief of the Bureau, who came from Washington particularly to witness the records and condition of the fruit. The MORMACISLE in cooperation with the Department of Agriculture had special equipment installed to enable the cargo to be admitted to the United States without having to undergo extensive treatment in the Argentine to kill off all evidence of the Mediterranean fruit fly.

Some two years ago the Bureau of Plant Quarantine found evidence of this pest in Argentina and until a new process was developed by the Bureau practically no Argentine fruit entered the United States. However, early in 1948 the Department headed by Dr. Latta, under the the direction of Dr. P. N. Annand, Chief of the Bureau, developed a system of recording instruments which were installed on Moore-McCormack Lines vessels which give a positive record to prove that the fruit has been kept at a temperature under 33° F. during the voyage.

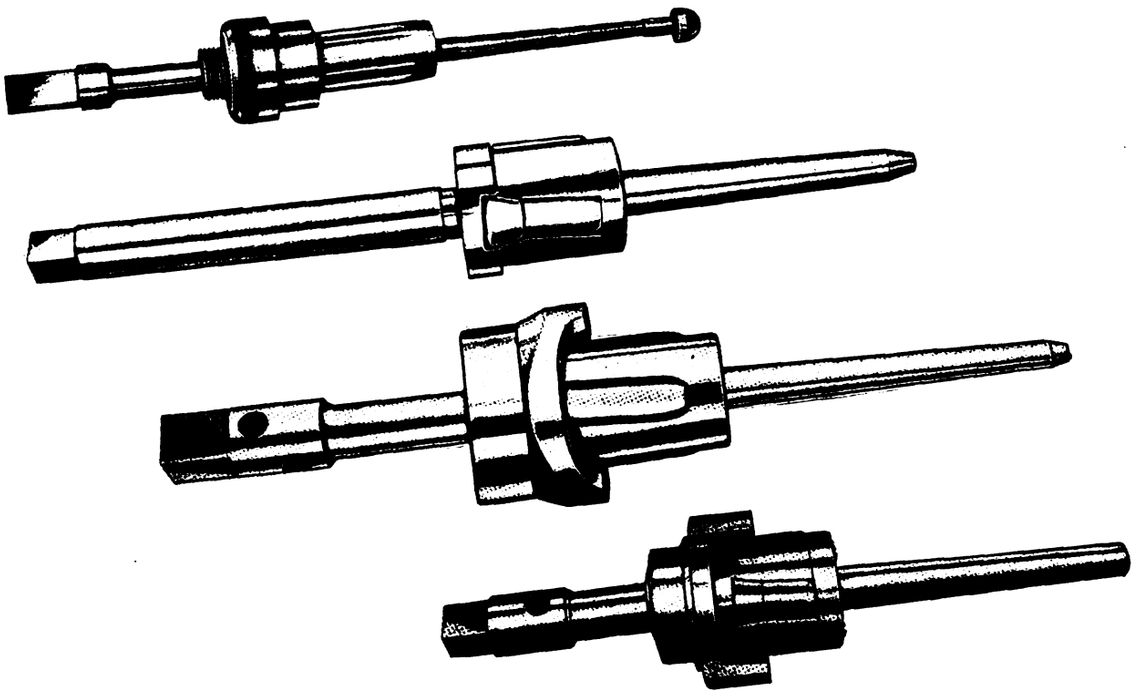
Moore-McCormack Lines operates twenty-one ships equipped with refrigerated cargo space, most of them operating in the East Coast South America service.

NORTHERN CALIFORNIA NAVAL ARCHITECTS NEW OFFICERS AND SPEAKERS — Left to right: WILLIAM A. BAKER, Bethlehem Steel Co., Shipbuilding Division, Secretary; SEWELL A. KNAPP, Moore Dry Dock Co., Vice Chairman; H. P. STEWART, Bethlehem, Chairman; JAMES A. PETRICH, Western Boat Building Co., Tacoma; MORRIS GURALNICK, San Francisco naval architect, Chairman of the papers committee. Mr. Petrich talked about tuna clippers at the March meeting of the Northern California Section.



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COMMITTEE SUB-CHAIRMEN. Seated, left to right: F. J. EWERS, Olympic Steamship, Decorations; E. J. BARRINGTON, Pope and Talbot, Finance; H. M. BURKE, American-Hawaiian Steamship, General Chairman; F. J. BURY, Moore-McCormack, Menu; Standing, L. to R.: J. G. PACEY, Interocean Steamship, Entertainment; PAUL A. PEARSON, Foss Launch and Tug, Games; H. L. SCHUYLER, Union Oil Company of California, Reception; C. H. CARLANDER, Puget Sound Freight Lines, Reservations; WEBSTER B. ANDERSON, B. R. Anderson and Company, Arrangements; G. J. ACKERMAN, American Mail Line, Advisory. FRED P. SCHMITT, United States Lines, San Francisco; GROVE LAWRENCE, Portland; K. C. CONYERS, West Coast Trans-Oceanic Steamship Company, Portland.

Center Photo; seated: WARD SETTERSTEN, Griffiths and Sprague Stevedoring; CAPTAIN L. C. PERRY, Marine Surveyor; FRANK SETTERSTEN, Griffiths and Sprague Stevedoring; F. KOLLMAR, Alaska Traffic Bureau; T. A. THRONSEN, Alaska Fast Freight Express; Standing: GEORGE E. BALDWIN, Dodwell and Company; VICTOR SETTERSTEN, ARTHUR MAYNARD, Griffiths and Sprague Stevedoring; DAVID HAMLIN, Attorney; COMMANDER L. P. FRATE, USN.

Right Photo; seated, left to right: O. E. GARVER, Assistant District Manager; NICK CARTER, Branch Manager, Seattle; F. A. McPHERSON, Marine Sales; C. T. WINGARD, Assistant, Marine Department; L. SIMONSEN, Manager, Marine Department; all of Standard Oil Company of California.

Standing, left to right: C. W. DAVIES, Head Lubricating Engineer, Standard Oil Company of California; GILBERT LOEWING, Moore-McCormack; KENNETH CROSS, Alaska Steamship; A. C. FENGER, Portland; F. C. BURY, C. J. GRAVESON, all of Moore-McCormack.





Below, top row, Left to right: GOVERNOR ARTHUR B. LANGLIE of Washington, MAYOR W. F. DEVIN of Seattle; CHARLES M. ROHDA, Puget Sound Bridge and Dredging; COLONEL L. D. HEWITT, Corps of Engineers, Department of Army; REAR ADMIRAL E. W. SYLVESTER, USN; H. W. McCURDY, Puget Sound Bridge and Dredging; REAR ADMIRAL R. T. McELLIGOTT, USCG; OSCAR DAMM, U. S. Customs; CAPTAIN A. C. EBERHARDT, USN; ADMIRAL H. H. GOOD, USN; MILLER GRIFFITHS, WM. J. CLARK, James Griffiths and Sons; GUY JUBITZ, JR., States Steamship, Portland.

Lower row, photo to left, clockwise: R. G. ZENER, Todd Shipyards; HAROLD WEBB, Army Transport Corps; J. S. ROBINSON, Todd Shipyards; JOHN W. ELKINS, Board of Marine Underwriters of San Francisco; G. H. MORGAN, Todd Shipyards; R. J. LAMONT, Todd Shipyards; CAPTAIN G. W. CALLBECK, USCG.; ARTHUR E. FARR, Todd Shipyards; S. K. SMITH, American Bureau of Shipping.

Center photo: WEBSTER B. ANDERSON, B. R. Anderson and Company; S. H. BEEK, Frank Waterhouse and Company, Vancouver, B.C.; TOM BULLOCK, Fairbanks-Morse; C. R. HUICK, FRANK McDERMOTT, Johns Manville; HOWARD N. CROMPTON, Union Steamships Ltd., Vancouver, B. C.

Photo to right: JACK DONNELL, KENNETH BARKER, C. W. VARNEY, Royal Mail Lines.



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takes this occasion to thank

the hundreds of

NAVAL ARCHITECTS

and

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who, during the past twelve years,

have contributed

to the widespread adoption, in all types of ships, of

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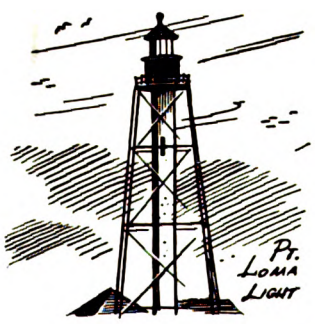
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Men who know these three lights

know Hendry quality and service

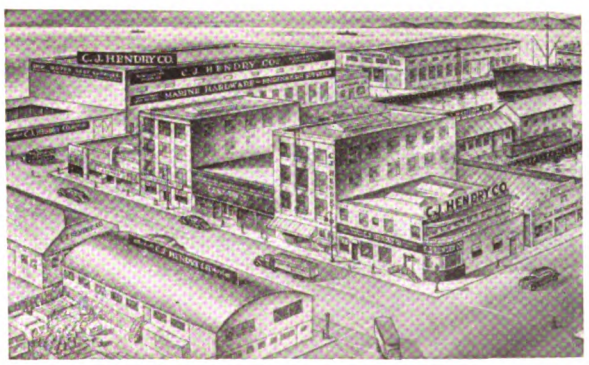




Past the San Francisco Lightship, the Los Angeles Harbor Light, and the Point Loma Light at San Diego, go the men who best know C. J. Hendry quality and service. On liner, freighter, tug, yacht, and fishing boat, these men know that their needs can be filled immediately from C. J. Hendry's own warehouses, rigging lofts and sail lofts.

During the past 82 years, C. J. Hendry has literally become factory branches for the nation's leading marine equipment manufacturers. Here you obtain every benefit you can from the factory, plus immediate service, plus the convenience of placing one order with one company for all supplies.

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OF AMERICA'S MARITIME INDUSTRIES
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Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

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"Got Any Cargo Today?"

It is a far cry from the "sales" line of the old-time freight solicitors, "Got any cargo today?" to the intelligent sales promotion programs aimed to create foreign trade which a number of the more aggressive American steamship companies have developed since the war.

Outstanding examples of trade development work by steamship companies are the two handbooks issued in the past six months by Farrell Lines, Inc. (formerly known as American South African Lines). Farrell Lines, serving East, South and West Africa, issued the first of these last fall. "African Markets—A Comprehensive Handbook for American Exporters," told what those rapidly developing areas bought from the United States and what products they could be persuaded to buy. It became a "best seller" and is now in its third printing.

In March the companion publication was issued, "African Resources—A Comprehensive Handbook for American Importers." It was prepared, according to Farrell Lines, "as an aid in increasing public awareness of the vast natural resources of Africa." In 28 pages are presented the latest available data on all the principal raw materials obtainable from South, East and West Africa. Maps, pictures, charts and statistics are given in the country by country survey; also data on the specific location of materials, nearest ports for shipment and the uses of products for industries are shown.

Of the new book Farrell Lines says, "It warns that the excellent market American manufacturers have found for their products in Africa threatens to diminish drastically unless our imports from Africa increase. From some parts of Africa the United States is buying only one-fourth of the value of goods it sells, and only by equalizing a profitable two-way trade can the best potential dollar market of the United States be maintained."

Farrell Lines has based its promotion of trade on the soundest of grounds, the mutual benefit of the countries involved. Farrell's program and the trade promotion programs of other sales-wise steamship companies are a challenge to those operators who make no effort to create new foreign trade, but remain content to bid for what cargoes others have developed.

At the same time these foreign trade programs on which steamship companies are spending time and money, constitute an answer to those critics who say American ship operators want the Federal Government to do everything for them.

These efforts by an increasing number of steamship companies to create new foreign trade augur well for the future of American ship operations.

⚓ ⚓ ⚓

Committee Urges Congress For Increased Shipbuilding in Western Yards

President Truman recently listened to a group of Pacific Coast congressmen plead for more shipbuilding for western yards and advised he felt there was justice in their prayer and promised an immediate study and survey of the matter would be made by the United States Maritime Commission and those branches of the armed services using fighting ships and passenger and freight vessels.

The above information is from an announcement by the Marine Association of Commerce of Los Angeles-Long Beach harbors, which has been instrumental in organizing a Pacific Coast Committee for Shipbuilding for National Defense, composed of labor and management representatives.

The members of Congress went to the President at the request of this committee and asked that the Maritime Commission be required to allocate a definite portion of its future construction to west coast yards and, if necessary, to ask Congress to allow a 15% differential for these plants as against eastern shipyards for new construction.

Alden G. Roach, president of the Consolidated Western Steel Co., is chairman of the Pacific Coast committee. Others are Robert Hayes, secretary of the Marine Association of Commerce and O. G. Satre and Max Belanger, representing labor groups. S. L. Kuykendall, San Pedro, and Paul W. Hiller, Wilmington, are members of the southern sub committee.

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Delivery Dates Set For Luckenbach Conversions

Todd Shipyards Corporation's Seattle yard is expected to deliver the first three of the seven C-3 type vessels being converted at Pacific Coast shipyards for the Luckenbach Steamship Company. These will be the ss GEORGE LUCKENBACH, formerly the ss SEA STAR, due for delivery May 2, the ss HORACE LUCKENBACH, formerly the ss SEA FLIER, due May 16 and the ss ROBERT LUCKENBACH, formerly the ss SEA RUNNER, due May 30. On that same date, May 30, Moore Dry Dock Company, Oakland, is scheduled to deliver the ss SEA DEVIL.

Delivery dates for the remaining three are: ss F. J. LUCKENBACH, formerly the ss SEA BARB, Willamette Iron & Steel Co., Portland, June 4; ss SEA BASS, Moore, June 25 and ss SEA CAT, Consolidated Builders, Portland, July 26.

Eventually all the vessels will be given names of members of the Luckenbach family.

In addition to these seven vessels, the Luckenbach Company is converting the ss LAMAR at the Baltimore, Maryland yard of The Maryland Dry Dock Company. In all, the conversions are costing approximately $6,000,000.

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Dollar value of imports through the Port of New Orleans for the year 1948 amounted to $424,000,000 according to U.S. Department of Commerce figures. This figure represents an increase of 19.1 percent over 1947.

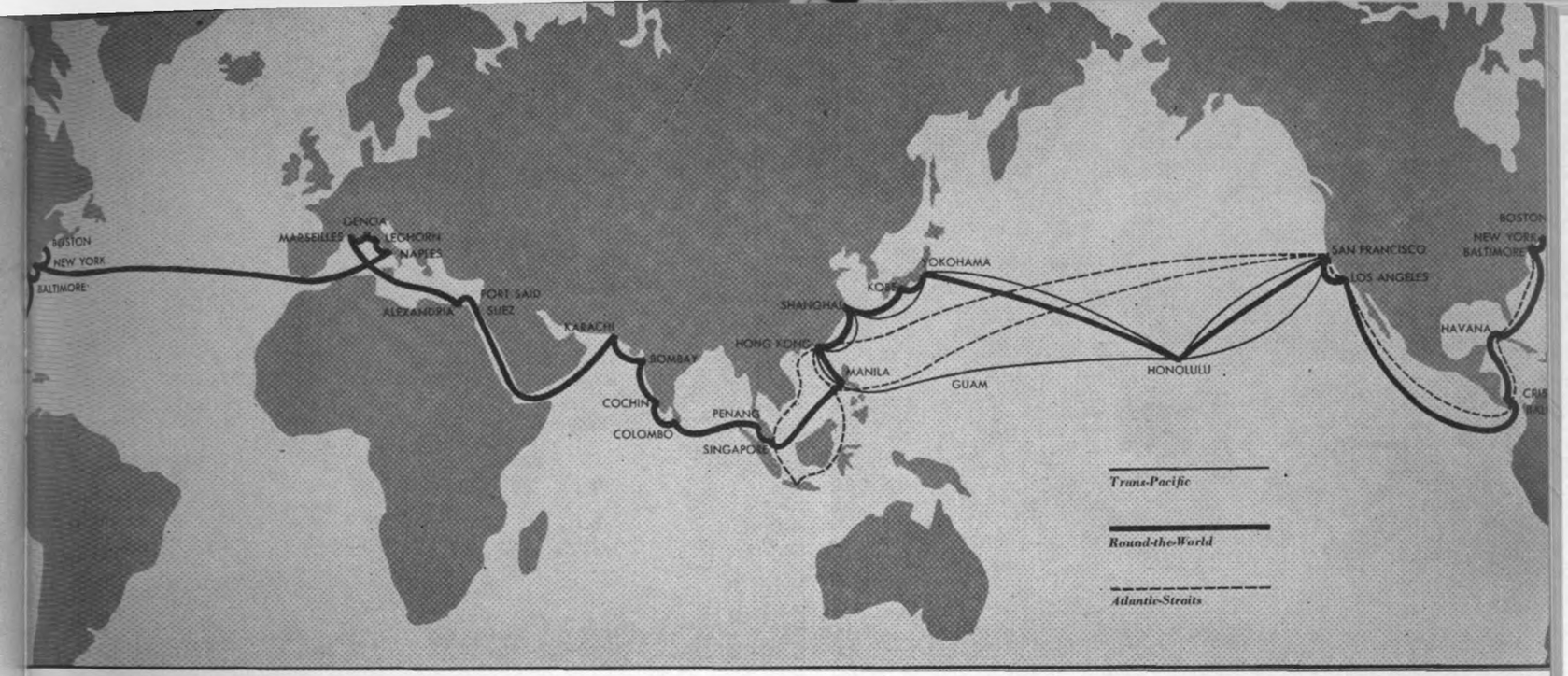
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SS PRESIDENT HARRISON, latest addition to the American President Lines' fleet, as she sails out of Mobile Bay after complete reconversion by the Waterman Repair Division. Ship is an example of APL's "shipper satisfaction" design with special valuable cargo lockers, refrigeration, temperature recording for all holds, Cargocaire dehumidification, and other features.

Photo by Bill Shrout, courtesy of Waterman

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'Round the world with elephants and frozen milk.

APL SHIPS DESIGNED FOR SHIPPER SERVICE

PRESIDENT HARRISON, latest addition to APL's modern fleet, is typical of how company ships produce "shipper satisfaction."

"We carry anything anywhere in the world," says the freight sales staff of American President Lines.

And this is by no means an idle boast. If you have an elephant to ship from Asia to Los Angeles call APL—they've done it. Should you wish to ship a cargo of frozen milk to China call APL—they do it regularly. If you have a temperamental cargo for which moisture means a certain claim APL will offer you a sailing anywhere around the world on a Cargocaire-equipped vessel. American President Lines' ships are designed for shipper satisfaction.

Passenger men, ribbing the freight department, often say: "Anybody can book and handle cargo. Freight is inanimate. It doesn't require a lot of special and personalized service; and it doesn't complain and write letters to the management if the service isn't what it ought to be and a whole lot more."

Ken Varcoe, assistant vice president-freight traffic manager of APL has a ready answer. "Because freight is inanimate and can't write letters to the management," he tells them, "doesn't mean that special attention is not required—quite the contrary. There are all kinds of freight just as there are all kinds of people. And freight can be just as temperamental—if not more so—than people.

"A passenger may complain a little if his cabin is too hot or too cold, if the air conditioning system is not functioning just right, but it's no life or death matter. A brief inconvenience, perhaps, but he arrives at his destination none the worse for wear, and if he has had fun otherwise he may forget the incident and write a glowing letter of appreciation to the management.

"Not so with your temperamental freight shipment," Mr. Varcoe stresses. "Let the 'cabin' of your perishable cargo get too hot or too cold and you have no 'happy arrival at destination.' Chances are you have a 'fatality' and a claim!"

Working on this principle American President Lines gives the freight department a large say in the design of its new ships. No new construction or reconversion is started without general cargo arrangement plans being approved jointly by operating department and the freight traffic manager.

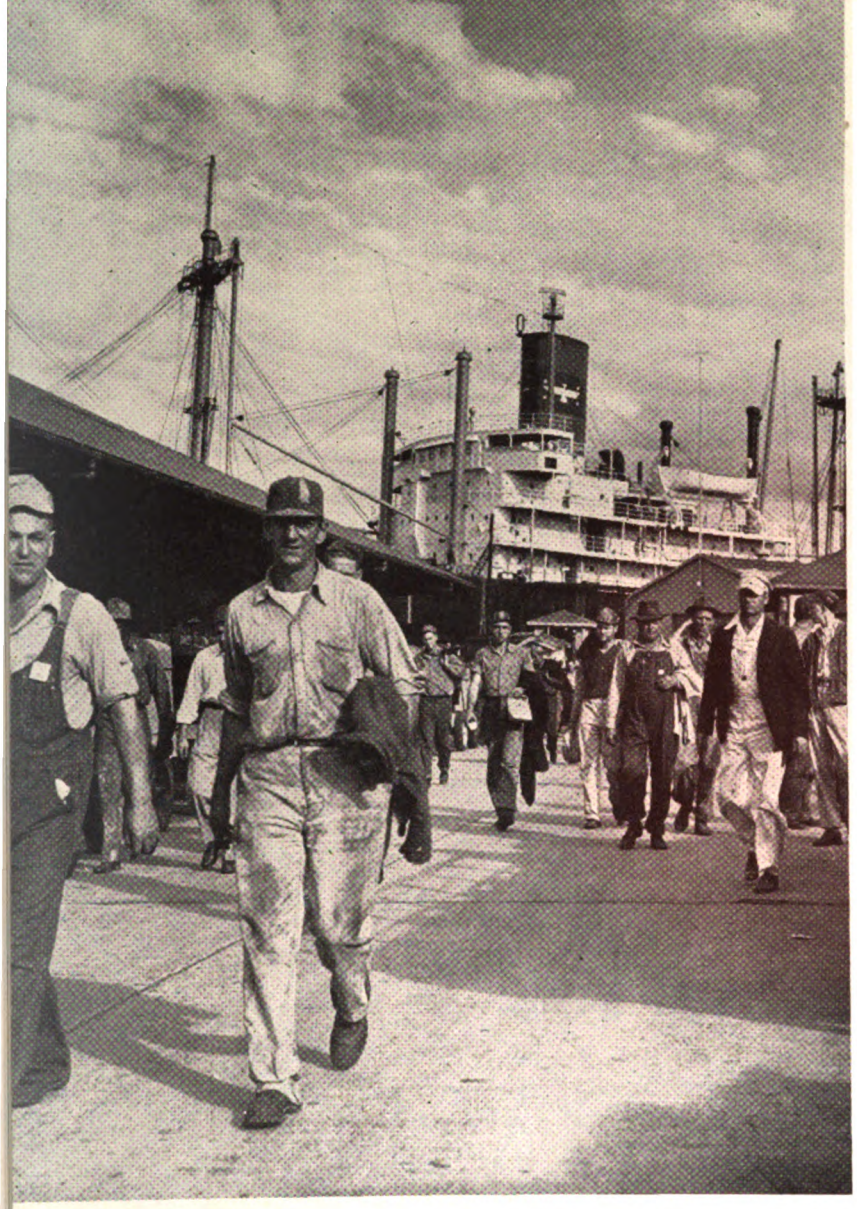
First the general cargo capacity is set by mutual agreement. The reefer space is next allotted, followed by deep tanks for oil cargo. Speed of the vessel is determined by the type of service and the frequency of the sailing schedule. After the "rough" plan of space allotment is laid out, the freight traffic department is called upon to determine the special requirements of the shipper. They lay the shippers' problems before the operating staff and the engineers work out a solution. In this manner APL has pioneered "conveniences" for shippers which are now becoming "necessities."

American President Lines was the first to install minus 10 degrees refrigeration, in addition to maintaining stabilized temperatures such as from minus 10 degrees to plus 10 degrees, 20 to 30 degrees, or 35 to 40 degrees as different types of cargo may require.

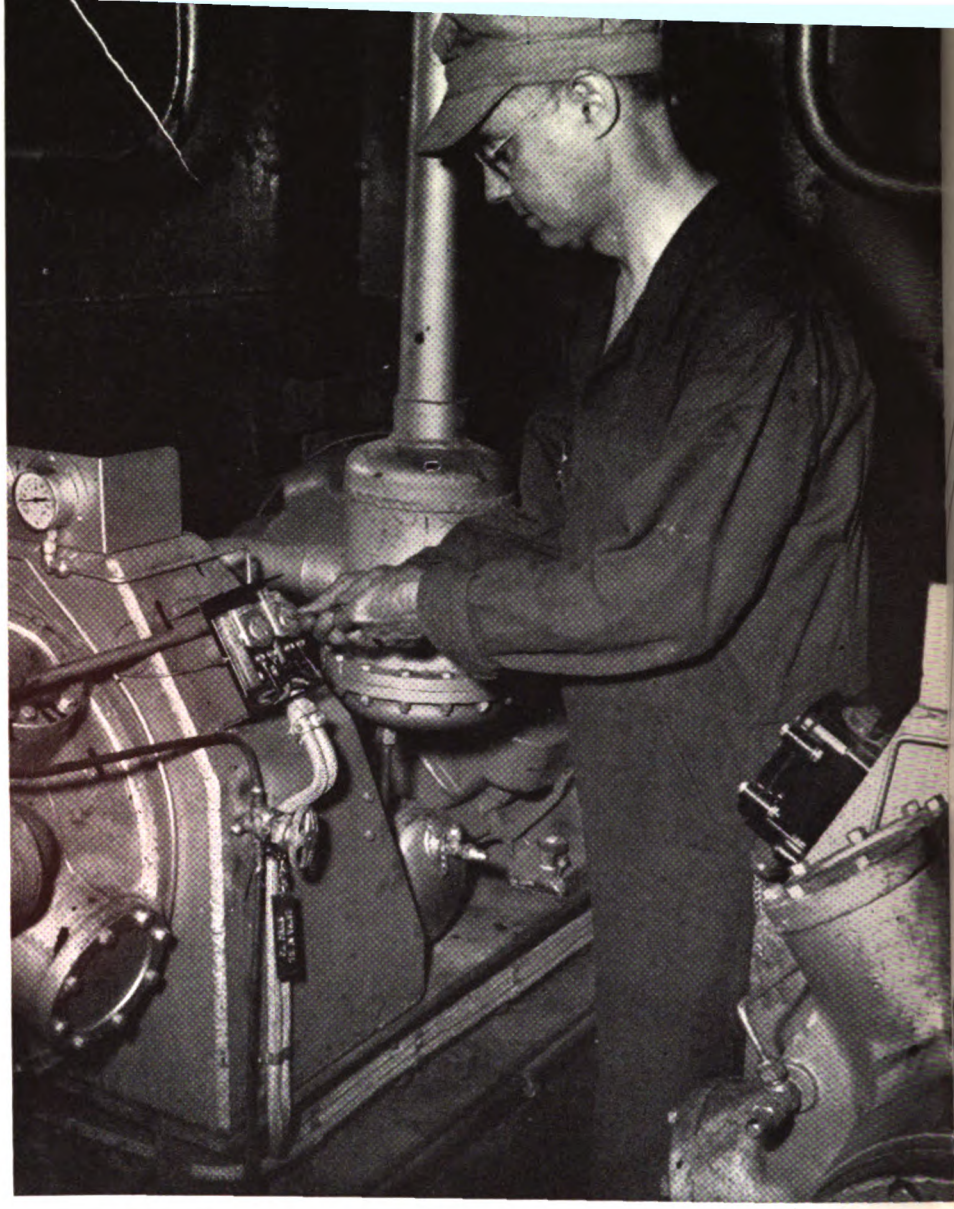
The deep-tanks on APL ships especially designed for the carriage of bulk liquid cargoes, are an innovation. Rather than being built as part of the ship structurally, as is generally customary, ten welded tanks are constructed within the ship's hull with void spaces on all sides. All inner surfaces, sides, top and bottom of the tanks are smooth as glass with no inside obstructions such as beam or swashplates. For cargoes that solidify, or any that require heating to work easily, a water compartment is built under and at the sides of the tanks which insures against possibility of scorching of cargo.

The Siporter (Side Port Loader) was

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END OF THE JOB for these workers of the Waterman Repair Division and the beginning for APL employees who will man the ship, find her cargoes, and keep her in condition to offer "shipper service."



SUB-ZERO REFRIGERATION offered by APL on many of its ships is given a final check by factory representative before PRESIDENT HARRISON joins others in APL's refrigerated fleet.



SHIP'S GEA
Heavy-lift
handy at
available.

installed on the luxury passenger liners PRESIDENT CLEVELAND and PRESIDENT WILSON to enhance the handling of cargo in the 'mid-ship cargo section of the vessels and to eliminate the obstruction and interference by trunked-hatches down through this area as well as masts or king posts and winches, etc. at this location leaving larger space for accommodations and play area at bridge deck.

The units consist of projecting arms or tracks for the hoist trolleys and which project through a side port on either side of the vessel.

The units also eliminate additional handling of cargoes between decks where lowering to the below decks at one of the other hatches and then moving by hand truck or roller conveyors to the refrigerated hold would be necessary.

This eliminates excessive handling as well as damage risk as a result of this additional handling by providing handling at the hold. This speed also affords less spoilage as a result of loading the cargo into the holds in a lesser time.

The Siporter is designed to handle a live load of 1½ tons (3360 pounds) at a hoisting speed of 150′ per minute and a crane traveling speed of 100′ per minute.

The units save considerable time in handling. Experience with the Siporter has shown that 29 stevedores have handled 320 tons of crated fruit in 20 working hours or an average of 16 tons per hour which is considered as excellent as compared to not more than 7 to 8 tons per hour in case the Siporter was not installed.

Experience has further shown that the Siporter equipment is very efficient as compared to the usual means of handling cargoes under similar conditions.

This installation is another example of American President Lines policy of providing the most complete, modern facilities for its shippers.

Heavy lift booms available for immediate use are standard equipment which enables APL vessels to load and discharge almost any heavy piece of cargo which is apt to be offered for shipment. The ability to handle such pieces with ship's gear is a great advantage, particularly at ports where the availability of shoreside heavy-lift equipment is questionable or subject to delay.

Cargocaire, a mechanical system for dehumidifying the holds of vessels and preventing damage from sweat and contamination, is a regular feature on the majority of APL vessels. Experience has proved the value of this equipment in maintaining "shipper satisfaction."

J. E. Murphy, marine superintendent of APL, says, "Cargocaire, as a means of insuring proper ventilation at all times, has proved since its inception highly satisfactory in outturn of diversified cargoes and in particular commodities greatly affected by sweat and improper ventilation. Cargocaire has also proved itself of value in the important function of dissipating bad odors, poisonous fumes, and the contaminating effect of certain cargoes."

Masters of various APL vessels have reported outstanding cases in which Cargocaire contributed materially to the company's policy of "shipper satisfaction" as well as saving losses in damage claims.

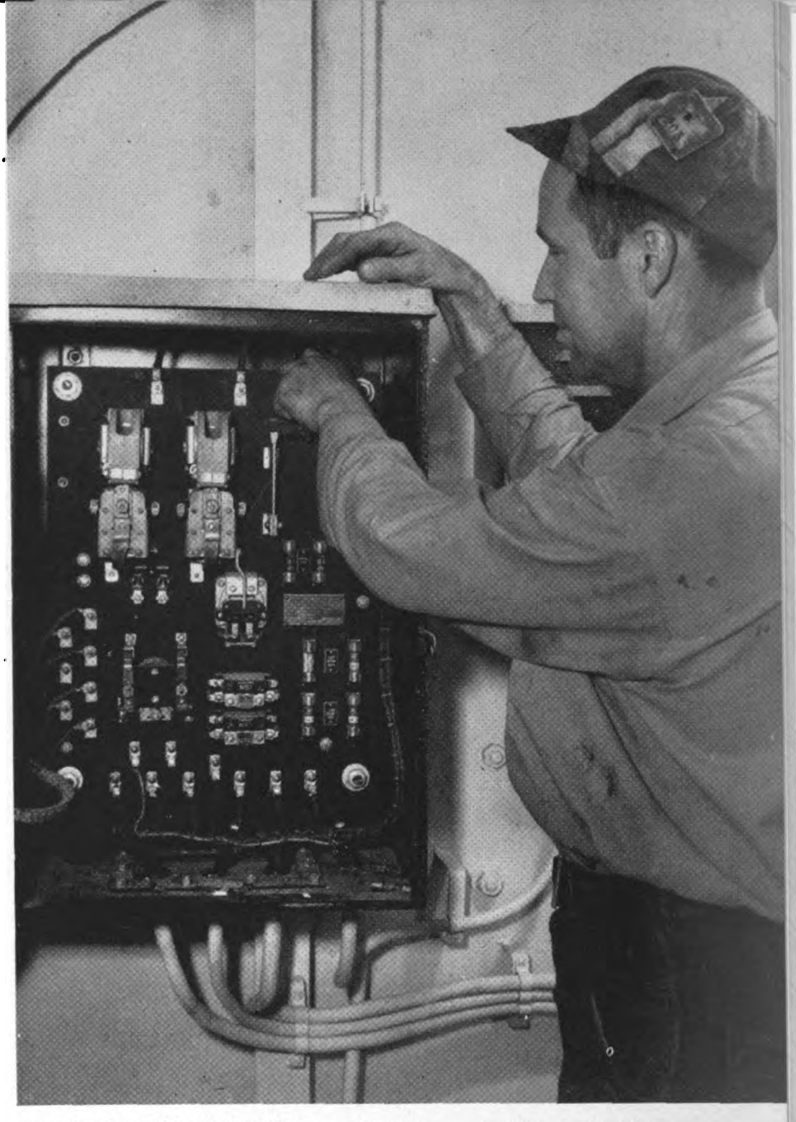
Captain J. H. Theusen reports "the PRESIDENT TAFT carried 4,000 drums of gasoline below decks for the Taku Bar and arrived with pure hatches; the Cargocaire thus preventing contamination of other cargo as well as alleviating a severe fire hazard."

Captain A. L. Herre, Master of the PRESIDENT McKINLEY, reports noticing a decided advantage in ventilation in the tween decks and holds, and also in the prevention of sweating when going from the North Pacific in winter time down to the warm tropical waters. On Voyage #4 West a large general cargo including potatoes, onions, mail and soya beans (all highly susceptible to sweat damage) was delivered in excellent shape, with all moisture excluded from the holds

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SHIP'S GEAR on APL vessels is designed for speedy and safe handling of cargo. Heavy-lift gear aboard the vessel saves time in many instances and comes in handy at out-of-the-way ports of call where shoreside equipment is not available.



CARGOCAIRE DEHUMIDIFICATION on APL ships assures shippers of goods arriving at destination free from sweat damage and contamination. APL's Cargocaire fleet has boosted the company's "shipper good will." Here a worker from the Waterman Repair Division gives a final check to the Cargocaire equipment aboard the PRESIDENT HARRISON.

despite the wide range of temperature experienced on the crossing.

APL's files are filled with similar reports of damage prevention as a result of Cargocaire dehumidification, and freight men are keenly aware of the boost in shipper "good will" through perfect delivery of cargoes.

To better serve its customers, APL provides the services of 199 branch offices and selected agents throughout the world. These key members of the company's team have developed a sound knowledge of the shipping business through years of practical experience and constant attention to the shipping facilities demanded by the Orient and round-the-world export and import trade. They know the shipping business. To specifically illustrate this point, here is the service record of American President Lines personnel in the Far East. (American personnel only):

	Average Years Employed	Average Years In Orient
Headquarters Staff	29.25	25.25
Managers	26.00	22.66
Balance American Staff	13.10	6.62
	22.78	18.17

Highlighting the return to peacetime activities was the completion of America's two finest post-war luxury liners. The PRESIDENT CLEVELAND and the PRESIDENT WILSON. Each built at a cost of 25 million these twin Queens of the Pacific maintain a five to six weeks cruise schedule between California and the Orient on an itinerary which includes calls at Honolulu, Manila, Hong Kong, Shanghai, Kobe and Yokohama.

The vital Atlantic-Straits route was restored to the company by the U. S. Maritime Commission on May 21, 1948. This route provides a direct two-way water link between U. S. North Atlantic coast ports and California and the Philippines, Hong Kong, Dutch East Indies and Malaya. The company's interest in the route dates back to 1929 when it instituted American flag service between California and the Strait Settlements via the Philippines, returning east bound to California. Later the service was extended to the Atlantic Coast via Panama.

Continuation of the famous combination passenger and cargo vessel 'round-the-world service, was assured recently when the company's board of directors entered into an agreement with the U.S. Maritime Commission for the construction of three deluxe, 19 knot passenger-cargo liners at a total cost of approximately $33,000,000. The keel for the first of these vessels was laid early last month.

Canadian Vessel Gets Ten Todd Oil Burners

The former Canadian Navy frigate HOLLOWELL, recently left the Todd Brooklyn Shipyard after having ten Todd Hex-Press mechanical-atomizing oil burners installed and miscellaneous repairs made to prepare her for a trans-Atlantic voyage.

George J. Stathos, of the Pelagic Co., Ltd. agent for the owners, the Irco SS Co., redesigned the 304 foot, 1400 ton vessel and will supervise its transformation from a fighting ship to a modern commercial vessel carrying 120 first, 140 second and 150 third class passengers.

A new super-structure will be built on the top deck forward which will house the glass-enclosed dining salon and public rooms and an additional super-structure on the after deck for staterooms.

Not as yet renamed, the HOLLOWELL will operate generally from Alexandria to Beirut, Haifa, Marseilles, Naples and Piraeus.

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Coffee imports through the Port of Houston during 1948 jumped 30 percent over 1947 to set a new all time record of 1,110,917 bags, according to R. T. Behannon, general manager of the Houston Port and Traffic Bureau.

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COAST CONVERSIONS BRING WATERMAN FLEET TO 45

Ten ships reconverted by Pacific Coast yards now in world-wide service.

The completion in February by Everett Pacific Shipbuilding and Dry Dock Company, Seattle, of three reconversions brings the strength of the Waterman Steamship Corporation fleet to a total of 45 C-2's. Ten of the eleven ships purchased by Waterman from the Maritime Commission were reconverted on the West Coast and one at the company's own Repair Division. In addition to the three reconverted by Everett Pacific, two were reconverted at Todd-Alameda, two at Todd-Seattle yards, one at the San Francisco yard of the Bethlehem Steel Co., Shipbuilding Division, one at Puget Bridge Sound & Dredging Co., Seattle, and one at Triple A Machine Works, San Francisco.

The vessels, all former APA's or C-2 transports, were reconverted to standard Maritime Commission design C2-S-B1. The work consisted primarily of reconditioning and inspection. All main engines, main gears, boilers and auxiliaries were opened and thoroughly reconditioned after inspection by members of an eleven-man staff of port engineers for Waterman, drawn from the foremen ranks of the Waterman Repair Division.

Strapped for 300 feet with ⅝ x 48 inch steel to gain an additional 22 inches of draft, increasing the capacity by approximately 1100 tons, the reconverted ships were outfitted with 16 sets of cargo gear each and with American Hoist & Derrick Company electric winches. Passenger quarters for eight were provided. Because of the provisions of the Ship Sales Act, under which these vessels were purchased, the ships incorporated none of the special Waterman features found on other vessels of the company's fleet. The Ship Sales Act requires that vessels be returned to original standard design.

The reconversion of the eleven vessels cost over $6,000,000. All are turbine driven, equipped with Hagan controls, with other auxiliary equipment generally the same. All troop installations and military installations were removed and the vessels restored to their original structural condition for carrying cargo.

Hardly an item of equipment or square foot of hull escaped attention. Deck houses, bulkheads, masts, kingposts, booms, rigging and lines were restored. Doors, hatches, airports, ladders, ramps, railings, sanitary fixtures and furniture were renovated or renewed. Commissary spaces, hospital room, laundry and carpenter shop were provided. The electrical, refrigeration, piping, ventilation,

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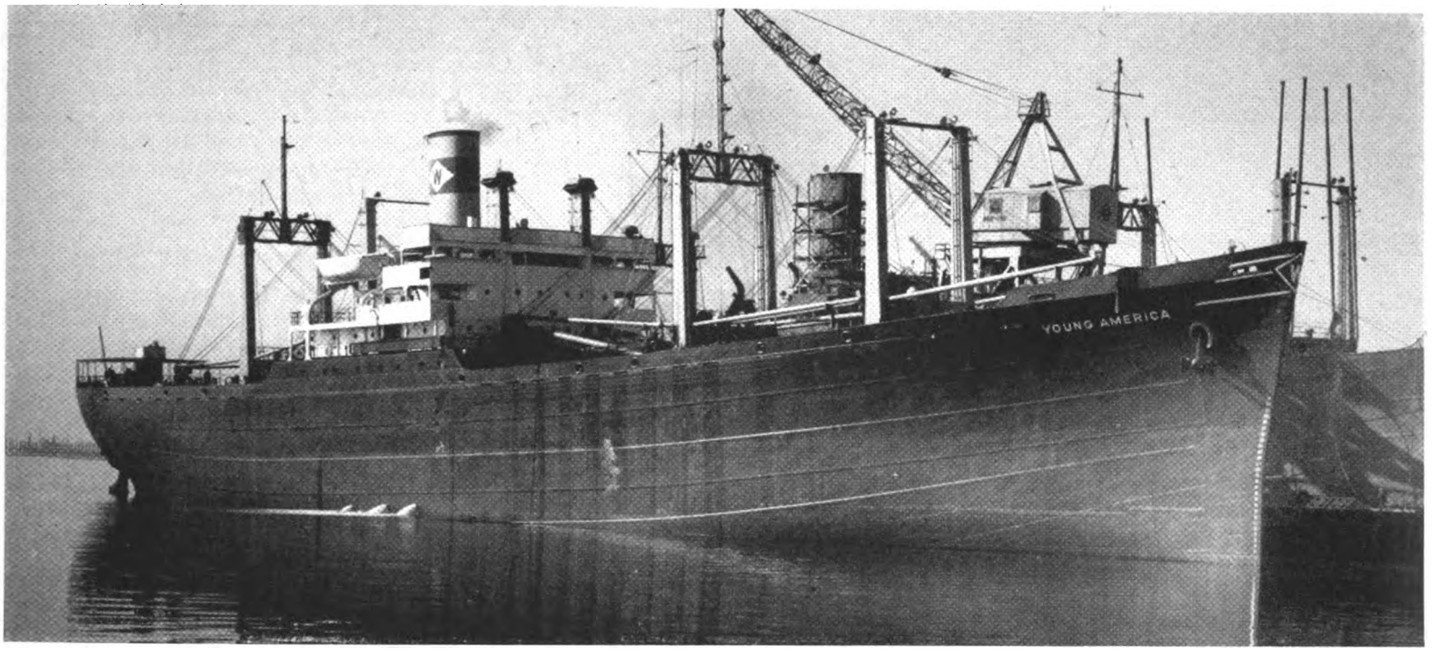


Photo Courtesy Everett Pacific Shipbuilding and Dry Dock Company.

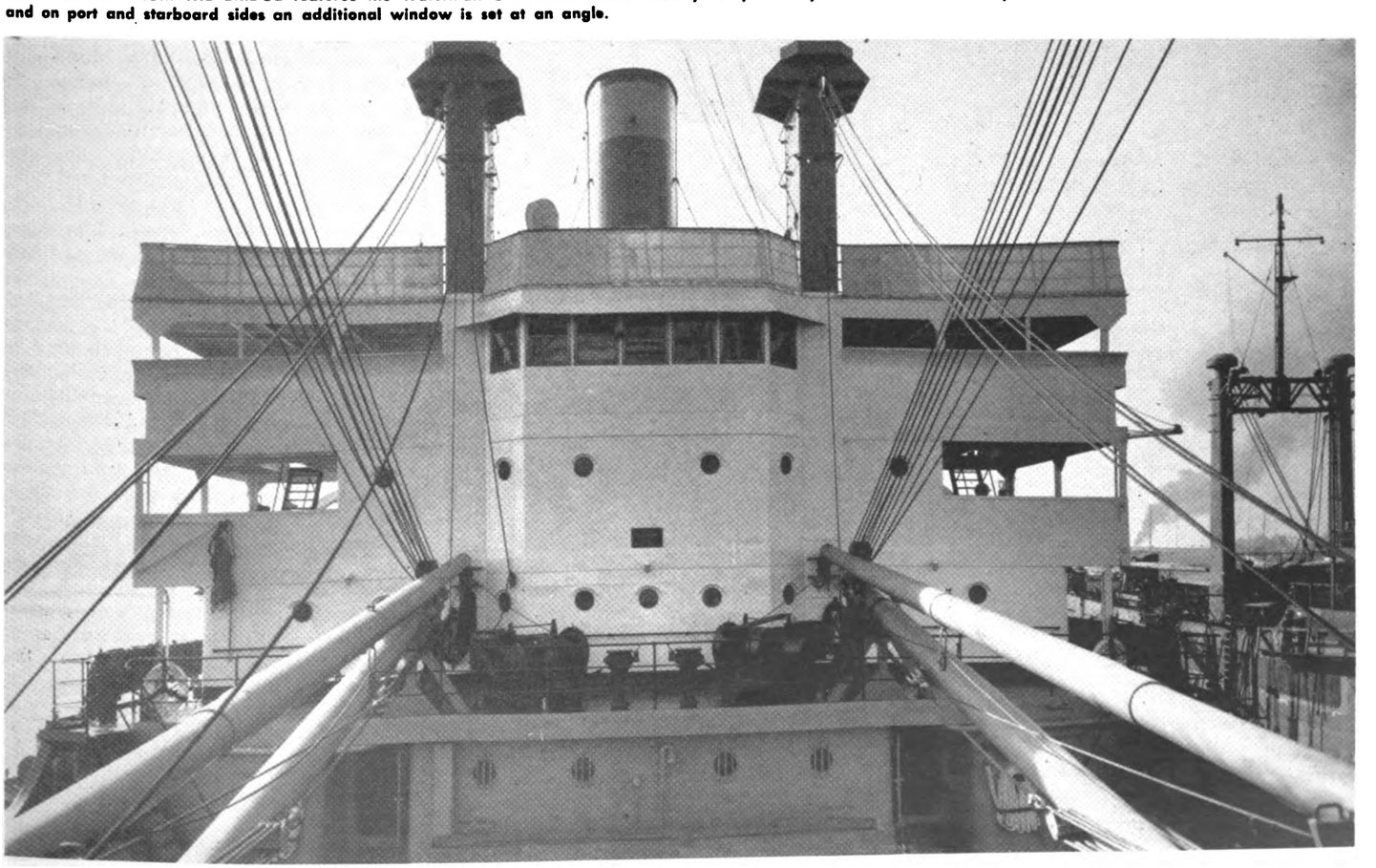
SS YOUNG AMERICA is typical of six C2-S-B1 type vessels reconverted at Puget Sound Yards to cargo carriers for Waterman Steamship Company, three at Everett Pacific Shipbuilding and Dry Dock Company, two at Todd's Seattle, and one at Puget Sound Bridge and Dredging Company.

heating, fire detection and fire extinguishing systems were overhauled. Machinery, lifesaving, and navigating equipment were reconditioned and the vessels were painted throughout.

The vessels, with their present names, previous names, and former classification are as follows:

Name	Former Name	Former Type	Yard	Delivery
GOLDEN CITY	no change	APA169	Everett Pacific	12-3-48
MOBILIAN	TYPHOON	C-2 Trans.	Todd Alameda	12-7-48
YOUNG AMERICA	no change	C-2 Trans.	Everett Pacific	10-27-48
STONEWALL JACKSON	HOTSPUR	APA-102	Todd Seattle	11-8-48
FAIRHOPE	WINGED ARROW	APA-170	Bethlehem San Francisco	12-30-48
WAR HAWK	no change	APA-176	Puget Sound B. & D. Co.	1-15-49
CHOCTAW	DASHING WAVE	C-2 Trans.	Triple A Machine Wks.	2-11-49
CITRUS PACKER	HERALD OF THE MORNING	APA-173	Everett Pacific	2-18-49
JEFF DAVIS	JOHN LAND	APA-167	Todd Seattle	12-20-48
CHICKASAW	DEL SANTOS	APA-77	Todd Alameda	2-24-49
CHERUBIN	CLAIRBORNE	C-2 Trans.	Waterman Repair	8-25-48

CLEAR VISION FROM THE BRIDGE features the Waterman C-2 reconversions recently completed by several Pacific Coast yards. Five Kearfott windows face forward and on port and starboard sides an additional window is set at an angle.



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WASHINGTON Reporter

By The LOG's Own Correspondents

Increased Foreign Fleets

Foreign fleets are determined to build up even if it means at the expense of the American Merchant Marine. For example, the Norwegians have been successful in obtaining State Department championship for their request for 300,000 tons of American steel with which to build new vessels in foreign yards. They'll not get all they asked for, but a large part of the request.

Only recently Japan, with authorization of SCAP, placed orders for six whale catchers for Norway of 470 gross tons each; three combination passenger-cargo vessels of 10,000 tons each for unnamed interests; three 17,500-ton tankers for Norway, and three 5,000-7,000-ton dry cargo vessels for Denmark. In addition, in Japan, the keel for the first of what is expected to be a 15-Japanese ship building program was laid in the Kobe Yard of Mitsushi in January. The vessel is to be 6,150 gross tons, about 400 ft. long and 3,600 hp. It will be owned by Senpaku-Kodan and Osaki Shosen Kaisha.

As for the steel for Norwegian shipping, top sources here say Norway, Sweden and Denmark will receive about 75% of a monthly allocation of 33,000 tons of steel to ECA countries of which 20,000 tons are to be steel plate. Terming the steel allocations an "ECA program," the same sources indicate allocations were an inducement to Norway to join the Atlantic Pact.

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New Trade-In Idea

A provision may be added to the NFAS Long Range Shipping Program now languishing in the HMM&F Committee as H. R. 3289, to authorize USMC to accept trade-in of liberty ships for credit on payment for better or more suitable war-built vessels offered for sale by the USMC to American buyers.

The provision, as it may be proposed, would also make it mandatory that there be no change in the statutory sales price of the purchased ship, and would allow reasonable depreciation in determining trade-in allowances. The latter is felt necessary to guarantee that future purchasers would not be in a better position than those who have already bought vessels under Ship Sales Act.

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Army Uses More Commercial Ships

Numerous conferences between NFAS officials and the Army indicates greater utilization of U.S. Flag commercial shipping than heretofore.

It was learned that such conferences have already had a salutory effect on movement of cargoes. A few months ago after the Army adopted a program of using commercial liner vessels for parcel lot cargoes from Atlantic and Gulf ports, more than 80,000 tons of cargo were booked via the berth services.

There are indications now that parcel lot movements, rather than the former practice of holding cargoes until shiploads could be accumulated, will increase from both Atlantic and Gulf Coasts, and particularly from the Pacific Coast.

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Panama Canal Toll Study

Rep. Clark W. Thompson, chairman of the HMM&F sub-committee of the Panama Canal Committee, has indicated a searching and thorough study into Panama Canal tolls policies. Already such facts are being disclosed that in 1948, including the free transits of Government ships, Canal operations netted nearly $5,000,000 or the equivalent of 22 cents of the present 90c-a-ton charge on commercial vessels.

Questions forming now are why the Canal charges such items as public buildings and grounds, sewers, hospitals, sanitation, police and fire protection against Canal operations.

Other questions involve such items as $2,000,000 of hospital expenses, nearly $1,000,000 in school costs, more than $500,000 of highway work, and charges of an air terminal and cemeteries at the Isthmus, all charged against receipts from commercial ship tolls.

The subcommittee is expected to have completed its work by June 30th. In addition to Chairman Thompson, other members are Representatives T. B. Fugate (D) Va., and Edward T. Miller (R) of Md.

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Army Refuses Ship Return

The Army flatly refused a request from Vice Admiral W. W. Smith, USMC Chairman, for return of three vessels which have been operating from U. S. Pacific ports to Alaska on a loan basis.

Replying to Admiral Smith, Army Secretary Kenneth Royal declared:

"It is recognized that it is the policy of Congress to foster the development and maintenance, in so far as is practicable, of a strong and adequate Merchant Marine. The Department of the Army has consistently supported the policy of a strong and adequate Merchant Marine to the greatest extent practicable. . . . It is not considered . . . that the Congress intended by its pronouncement of policy to direct discontinuance of the maintenance of an adequate Army Transportation service. . . . Vessels operated by the Army definitely are an integral part of our national Merchant Marine and tend to provide an even greater degree of emergency readiness than do commercially-operated vessels."

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ECA Cargoes for U.S. Ships

Conferences between American shipping management, labor, the White House and Congress, as well as with ECA officials, finally produced a compromise amendment, adopted by the Senate to the Foreign Aid bill, and expected to be adopted by the House, which provides for U. S. Flag ships to carry 50% of ECA cargoes.

The amendment reads:

"The Administrator shall, in providing for the procurement of commodities under authority of this title, take such steps as may be necessary to assure, as far as is practicable, that at least 50% of the gross tonnage of commodities procured out of funds made available under this title and transported to or from the U. S. on ocean vessels, computed separately for dry-bulk carriers, dry-cargo liner and tanker services, is so transported on U. S. Flag vessels to the extent such vessels are available at market rates for U.S. Flag vessels; and, in the administration of this provision, the Administrator shall, insofar as practicable and consistent with the purpose of this title, endeavor to secure a fair and reasonable participation by U.S. Flag ships in cargoes by geographic areas."

As far as could be determined here, the amendment as passed by the Senate did not completely satisfy the industry or the AFL maritime unions, but was approved by CIO maritime unions and by ECA, and the White House appeared gratified that a highly controversial Congressional battle had been avoided.

The statement by Senator Magnuson, who introduced the amendment, is significant:

"I want it clearly understood that unless the flexible provisions of this amendment are carried out, we shall have to ask the Senate and House to pass a mandatory bill requiring the Administrator to ship in American bottoms at least 50% of the goods over which the Administrator has control in offshore trade, in coastwise trade, and in crosswise trade, on all categories of vessels."

It is understood Chairman Bland of the House Merchant Marine and Fisheries Committee will make a similar statement when the amendment comes up in the House, and may go even further in stating that 1340 will be kept on the House Calendar for immediate use. In addition, it was learned Chairman Bland will appoint a "Watchdog Committee" to see whether the ECA Administrator is able to obtain by administrative procedure approximately what is required in H. R. 1340.

Net result of the compromise is a great

Editor's note: NFAS stands for National Federation of American Shipping, Inc. HMM&F stands for House Merchant Marine & Fisheries Committee.

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WASHINGTON Reporting

step forward for the American Merchant Marine, even though the industry lost its objectives, as expressed in 1340, of obtaining cross trade participation, non-inclusion of Army carried ECA cargo (estimated about 10% of the 50%) and the application of 1340 to all government financed cargoes. If anything, the compromise illustrated again how powerful and persuasive the U. S. shipping industry can be when cooperation between its various segments is effected toward a single objective.

Washington observers feel that ECA Administrator Hoffman is perhaps the biggest loser. He asked for a clear-cut Congressional policy and received not only an amendment, but Congressional admonition and perhaps a "Watchdog Committee" which adds one more inquisitive eye to the many looking in on ECA operations.

Other observers saw in the culmination of the 50% battle a point of long range significance: Congress spoke out sharply on American policy regarding the American Merchant Marine, that it wants it to be strong and to participate in cargoes financed by taxpayers, that it wants Government to protect and promote such a Merchant Marine.

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'Runaway' Ship Legislation

Some sources here doubt that time will be available for hearings on H. R. 3291 introduced by Rep. Hart (D) of New Jersey which in effect outlaws transfers of American-owned ships to foreign flags, and use of funds to pay freights or fares on such vessels.

If hearings are held industry is expected to voice vigorous objection. Some owners have already advised that such legislation, if enacted, would actually decrease American shipping by causing such American-owned companies to cease building vessels for foreign flag operations with a serious drop in shipyard labor.

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Water-Rail Talks Okehed

Legal counsel for shipowners have advised the latter there is no prohibition against water and rail carriers carrying on discussions concerning depressed or non-compensatory rates which have plagued domestic shipping for a number of years.

Talks are expected to start shortly on a high echelon. If the talks fail to result in adjustment of discriminatory rates Congress will be asked to find a remedy.

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Industry Asks Seamen Exclusion From FLSA

The shipping industry petitioned Congress to exclude seamen from minimum wage provisions of the Fair Labor Standards Act, as well as to prohibit the inclusion of cost of board and lodging furnished to seamen in the determination of minimum wages.

The industry, in testimony furnished to the House Labor Committee through NFAS, related that although the FLSA was designed to eliminate and prohibit substandard conditions, merchant seamen wages are anything but substandard.

NFAS advanced information showing American AB's basic wages now at $226.01 compared to similar seamen on Canadian, Greek, Norwegian, British and Swedish vessels with basic wages of $170, $34.33, $74.59, $80.60 and $86.27 respectively. The industry further showed that on top of the basic wage AB's normally received overtime and penalty pay approximating an additional 35% making monthly take-home pay over $300 exclusive of board and lodging.

The industry, evidently feeling that a labor-influenced Congress would or might bring seamen within the minimum wage provisions of the Act, asked as an alternative that if seamen were brought in, it would only be on the basis of the Act being applicable only during hours in which they actually worked, and that board and lodging be included in determining minimum wages if seamen were brought into the Act.

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Tankers to Participate in ECA

Rep. Eugene Keough (D.) of Brooklyn, has received assurance from ECA officials that American-flag tankers will receive at least a third of the indirect tanker movements aided by ECA.

Rep. Keough had planned to offer an amendment to the ECA Bill which would accomplish such a purpose, but after the ECA assurances said he would not offer the amendment.

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Telecommunications Conferences

Opening of the dual Fourth Inter-American Radio Conference and International Telecommunications Union Region 2 Conference, scheduled here April 1, was postponed to April 25. The dual conferences are expected to last six weeks.

With relation to marine matters, the conferences will discuss certain general frequency allocations involving marine radiotelegraph and radiotelephone frequencies; implementation of the new radiotelephone distress and calling frequency of 2182 kc, including the drafting of such provisions as will be required to establish the basis for an inter-American marine radiotelephone safety system; and inter-American standardization of use of certain marine radiotelephone frequencies in the VHF bands.

The Spring Assembly meeting of the Radio Technical Commission for Marine Services was held in Boston April 28-29. The Assembly heard papers relating to long range marine telephony, harbor communications, marine regulations and international matters.

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PATA Denies Legislative Program

In the March issue of The LOG, "Washington Reporting," an item headed "PATA Has Nine-Point Legislative Program" was published. Mr. Albert E. Benson, Secretary-Treasurer of the Pacific American Tankship Association has denied this story.

The source of this item was considered excellent and the information was obtained in writing. According to Mr. Benson "the P.A.T.A. has not considered, proposed, or discussed such a legislative program."

The LOG regrets any inconvenience this story may have caused the Pacific American Tankship Association.

Editor

Along Washington Corridors

Commodore E. M. Webster (U.S.C.G. Ret'd.) presently a Federal Communications Commissioner and former National Federation of American Shipping Director of Telecommunications is expected to be reappointed to the FCC when his term expires this summer.

The industry will strongly oppose the Hoover Commission recommendations which would, in effect, split up the U. S. Maritime Commission. The opposition will be made known when the proper time arrives, probably through the NFAS.

The industry is expected to seek elimination of Section 805(c) of the '36 Merchant Marine Act which limits salaries of officials of subsidized lines to $25,000 yearly.

Shipping industry opposition to ratification of International Maritime Consultative Organization appears to have more strength than believed; two USMC Commissioners apparently favor the industry position, and recent advices here from abroad indicate Sweden and Norway favor opposition. Bets seem to favor ratification however with State Department pressuring hard on the matter.

The two six months deferments of proposed 11 percent increase in Panama Canal tolls will result in estimated $1,000,000 savings to member companies of NFAS who has led fight to postpone toll increases.

The Maritime Commission has quietly undertaken a survey, at instigation of Commissioner Joseph Carson, to develop a comprehensive but inexpensive public relations and promotion campaign for American shipping. Stephen C. Manning, special assistant to the secretary, USMC, is to work out such a program, but it'll not be submitted to Bureau of Budget until probably the first part of 1950, to go into effect July 1, 1950.

Maitland S. Pennington, vice president, Pacific Transport Lines, former U. S. delegate to the ILO, is expected to be named adviser to the U.S. representative at the

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WASHINGTON Roundup

Geneva, Switzerland ILO meeting June 8. Although the ILO will deal mostly with other labor problems, some discussions are expected to be held relating to the Seattle ILO conference on maritime labor.

Hearings on H. R. 3289, the NFAS Long Range Shipping Program are now tentatively scheduled to start immediately after hearings on extension of Ship Sales Act of 1946, possibly the first or second week in May.

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June Shipping Conference

Frazer A. Bailey, NFAS president, who will be co-chairman of the meeting of the Committee on Sea Transport of U.S. Associates, is expected to head a delegation of top American shipping officials to the Congress of the International Chamber of Commerce at Quebec June 13-17. The Sea Transport Committee will meet on June 15. Top shipping officials from Europe are expected to attend.

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Transportation Association Studies Shipping

Transportation Association of America, which has undertaken to try to formulate a national transportation policy to submit to Congress in 1950, has appointed Chester C. Thompson, president, American Waterways Operators, Inc., of Washington, D.C. as chairman of the Waterway Panel.

This panel is now considering various matters relating to all types and forms of water transportation, including deep sea ocean carrier services in the foreign and non-contiguous domestic trades, and discriminatory and unfair competitive land transportation rates.

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Opposition To Commission's Proposal To Operate Dry Docks

A Brief Summary of the Position of the Shipbuilders Council of America and the Ship Repairing Industry Concerning the Proposal of the U.S. Maritime Commission to Install and Operate Dry Docks at its Permanent Reserve Fleet Sites.

Representatives of the Shipbuilders Council of America and the industry on March 3 and 4, 1949, appeared before the Committee on Merchant Marine and Fisheries to present their case in opposition to the Maritime Commission's proposal and to rebut the arguments advanced by the Commission in its study.

In the matter of comparative costs, upon which the Commission rests its case, the Council testified that with respect to each of the three major elements of cost, viz., dry docking and bottom preservation; towage; and installation, maintenance and operation of dry dock facilities, the Commission's estimates are completely unrealistic and not to be relied upon.

The Commission at no time has requested any member of the industry to prepare or submit estimates of the cost of applying bottom preservatives on dry dock. It proceeded to estimate such costs for the industry and for itself. The alleged cost of the work if performed by industry is as high as the Commission's costs are unduly low.

W. F. Blewett, Jr., executive vice president of the Newport News Shipbuilding and Dry Dock Company, citing inaccuracies in the Commission's report, stated that a careful analysis made by his company showed that a ship repair yard in the Hampton Roads area could do the work desired by the Commission at 35.3% less than the Commission had estimated cost in a commercial yard in that area. A detailed estimate by the Newport News Company, based on 100 ships, showed a cost of $8,100 per vessel as compared with $12,527 estimated by the Commission.

C. S. Rogers, president of the Norfolk Shipbuilding & Dry Dock Company, pointed out faulty thinking on the behalf of the Commission in its planning and estimating of towage. The Commission based its towage charges from Wilmington to Hampton Roads on a distance of 301 miles, while it is actually 358 miles, and disregarded the fact that the ports of Charleston (151 miles), Savannah (225 miles), and Jacksonville (315 miles) have dry dock facilities. Further, Rogers pointed out that the Commission included in its towage estimate 181 vessels now in temporary fleets; 459 vessels that are not in any fleet and other towage that should rightfully not be charged to bottom preservation work but to repair work, as well as excessive towage because of poor work scheduling.

There is no reason why repairs and bottom preservation should not be performed in sequence at private repair yards at which the repairs must be performed in any event on at least 75% of the vessels involved. Thus it would appear that most of the $48,000,000 which the Commission alleges it can save would have to be expended in any event in connection with repairs and is not a saving at all.

The Commission, it was claimed, appears to be unaware that sand for blasting cannot be purchased in local areas. In the instance of the Hampton Roads yards, according to Crawford Rogers of the Norfolk Shipbuilding & Dry Dock Company, the nearest source for suitable material is in West Virginia while, according to Joseph Haag, Jr., of Todd Shipyards Corporation, their West Coast yards procure such sand from New Orleans. Haag also described the work the Commission is now doing, calling it *topside preservation on interiors, superstructure and work on exterior hulls to the waterline as* "puttering."

Joseph Haag, Jr., vice president of the Todd Shipyards Corporation also contends that the Commission's estimated costs of installing and operating these dry docks are completely unrealistic. The Todd figures are based, not upon estimated costs, but upon certified returned costs of actual installations in 1942, and subsequent operation of *similar* Navy docks at its own repair plants. These figures indicate that it would cost the Commission some $8,000,000 more to install the docks than it has been estimated, and about $40,000,000 more for operation over a twenty-year period.

The net result of considering the unrealities of the Commission's estimates for these three major factors of cost tends to cast grave doubt on the matter of savings by Government operation, and indeed indicates strongly that there will be additional cost resulting from Government operation in competition with private industry rather than any saving.

The Council is confident that the Commission cannot sustain any claim for saving by government operation. Even if that were not so, it contends that the operation of dry docks, and the performance of all work on merchant ships incidental to such operation or made possible by such operation, has always been and still is a function of the private Ship Repairing Industry. Hence, any action resulting in the operation of dry docks by the Maritime Commission for any purpose whatsoever is a direct encroachment by the government on private industry, which will not only work to the detriment of that industry but do irreparable harm to the national security which looks to the ship repairing industry in time of national emergency.

D. D. Strohmeier, vice president of the Bethlehem Steel Company (Shipbuilding Division) stressed the importance of the private ship repair industry as an arm of our National defense and explained how this industry is now being threatened by lack of work, some prewar companies having already gone out of business on that account. He also said that if, as a result of any such installations by the Maritime Commission, the industry is forced to return the government-owned docks now in its possession for which rentals are paid and maintenance provided, the loss of such rentals and maintenance to the government (using the actual cost to Bethlehem as a yardstick for the entire industry) would total almost $10,000,000 per year. This compares with the

(Continued on Page 55)

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Photo courtesy of the Quincy, Mass. "Patriot Ledger."

Keel for S. S. INDEPENDENCE . .

First of the American Export Lines' two large, high speed passenger cargo vessels for Mediterranean service.

At the keel laying ceremonies in the Quincy, Massachusetts yard of the Bethlehem Steel Company's Shipbuilding Division, March 29, 1949, a number of American Export and Bethlehem officials were present and appear in the above photograph.

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Devoe 2-H Chromate Primer provides a double measure of protection for steel or iron surfaces above or below water. Tests indicate that its corrosion-resisting properties are distinctly superior to those of most red leads and other widely accepted primers. In addition, it is fully water resistant and assures thorough, lasting adhesion for subsequent finish coats. Dries to touch in 15-20 minutes, and may be re-coated in two hours.



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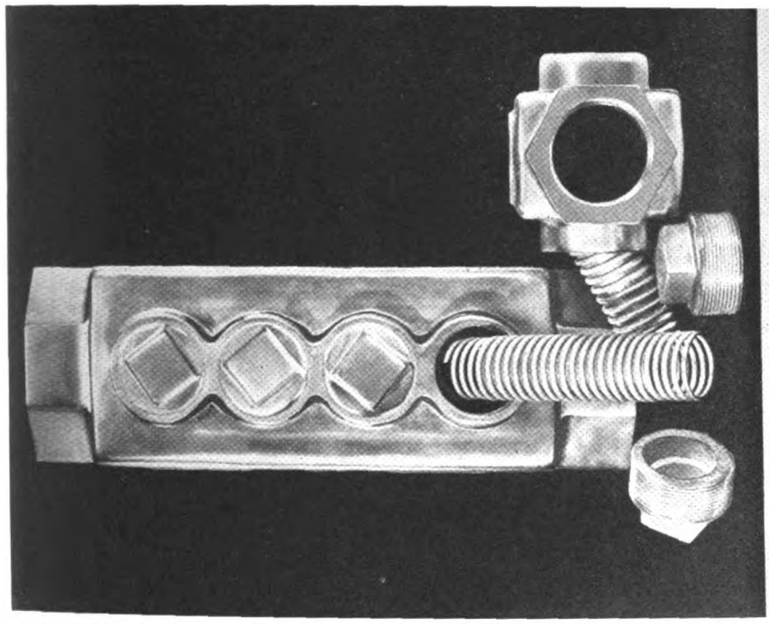
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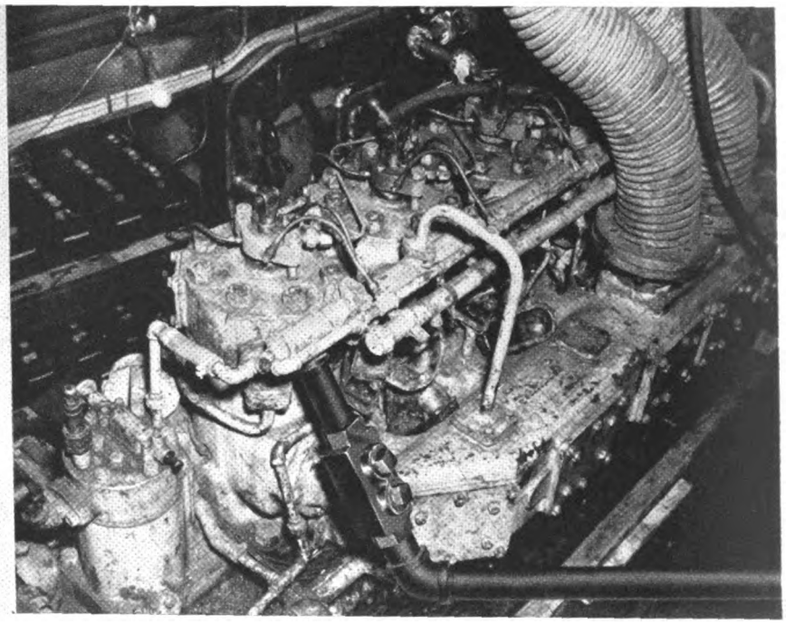
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CLEAR WATER FOR YOUR

COOLING SYSTEMS



Butler De-Scalers, Model 600 (bottom) and 50 (upper right), are simple, employ no chemicals and have no moving parts. The element, easily removed, is replaced once a year.



Butler De-Scaler Model 100 on the 275 hp Fairbanks-Morse engine of Russell Towing Company Tug No. 11. This company uses Butler De-Scalers on the cooling systems of all their gasoline and Diesel engines.

Butler De-Scaler eliminates rust and scale, requires attention only once a year.

The problem of combating the attack of rust, scale and corrosion on the cooling systems of Diesel engines and reducing the damage caused by overheating has been one that marine engineers have fought for many years. First step in solving this problem was the replacement of the open-type water circulation with closed, recirculating systems. It was found that the advantages of constant cool water pumped in from outside was more than counter-balanced by the harm done to the engines by salts, minerals and impurities being carried into and through the cooling tubes and water jackets.

Then came the development of water softening systems and the improvement of chemical compounds for reducing the scale and rust formation. While these two methods are still in general use and have proved relatively successful, they depend to a large extent on the human element to maintain them at maximum efficiency. Another factor has been the variation in mineral content of the water pumped into the cooling system at various points of the ship's run. While a certain amount of chemical compound will be more than ample for one type of water, it may be inadequate to handle added water of a higher mineral content or excessively alkaline or acid nature.

Now, however, a radically new method has been perfected of extracting corrosion-causing and scale-forming minerals from the cooling water and maintaining the proper pH value through galvanic action. This appliance is known as a De-Scaler and has been developed by the Butler Engineering Co. of New Orleans. The unit consists of a patented replaceable element in a brass housing which is attached to the cooling water output line as close to the engine as possible. The element itself is simply a core of "Butler-metal" within a spring coil of silverplated non-ferrous metal. The two metals of the element, being at a greater variance on the galvanic scale than any metals in the cooling system, attract the minerals in the water. The core, as a result, bears the brunt of the attack and the minerals are precipitated to the bottom of the cooling system for easy flush-out. The mineral-free water, in turn, washes away already existing rust and scale, taking it back into solution for re-extraction as it circulates around the De-Scaler. Having no moving parts, the De-Scaler requires no adjustment or attention except for replacement of the element once a year.

Human Element Eliminated

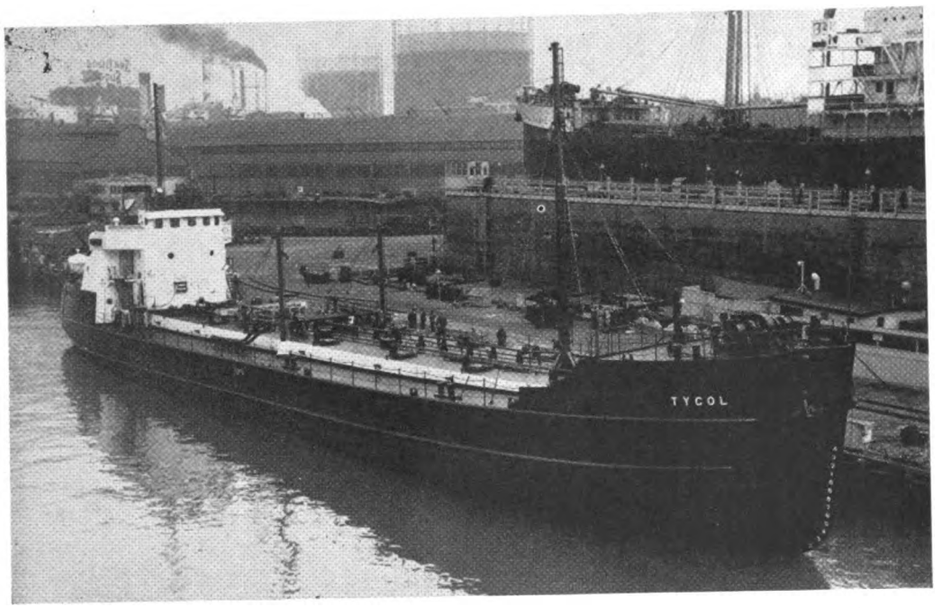
Since no chemicals are employed by the De-Scaler, the human element is virtually eliminated and, once the existing scale is cleaned out, the cooling water will remain crystal-clear.

Butler De-Scalers have already been installed on many Diesel-powered ships, notably the Moran and Russell tugboat fleets in New York. On land the Diesel-powered rail cars of the Sperry Rail Service Division of Sperry Products, Inc. have employed the De-Scalers for nearly two years with marked success. This latter service has put the De-Scalers to their severest test, since the Sperry Rail Cars travel to all parts of the United States and encounter all types of cooling water.

Butler De-Scalers were originally developed for industrial boilers to counter scale and corrosion which shortened the life of the boiler and necessitated frequent shut-downs for cleaning and de-scaling. Later a small type De-Scaler, known as the ATI model was produced for automotive cooling systems and has been most successful on busses, trucks and passenger cars. The Diesel type De-Scaler, which is also applicable to large gasoline engines, is known as the EZ series and is manufactured in different models for cooling systems of from 50 to 600 gallon capacity. For larger cooling

(Continued on Page 57)

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The TYCOL, completed after a new 30-foot section had been installed by the San Francisco Yard of Bethlehem Steel Company, Shipbuilding Division for Tide Water Associated Oil Company.

BETHLEHEM-SF LENGTHENS TANKER FOR ASSOCIATED

Put a ship on drydock.

Cut her completely in two at the midship section with oxygen acetylene torches.

Pull her apart 30 feet.

Install a new 30-foot section between the forward and after portions of her hull.

This was the unusual job recently completed at the San Francisco Yard of Bethlehem Steel Company, Shipbuilding Division, on a former Navy AOG type tanker, the OCHLOCKONEE. The vessel, which was purchased from layup by Tide Water Associated Oil Company, was lengthened from 221′ to 250′10″ overall, and her barrel capacity increased from 12,600 to 15,650 bbls. The TYCOL, as the vessel has been renamed, was operated by the Navy in the South Pacific during the war. She is powered by an 830 h.p. Fairbanks-Morse Diesel engine.

This type of job, and the method of performing it, is not new to the San Francisco Yard, although it is the first to be performed on the coast since the war. Toward the end of World War II, while the yard was building 2200-ton destroyers for the U.S. Navy, three of them were cut in half while still on the ways and lengthened a specified number of feet.

For lengthening the TYCOL Bethlehem chose the ground ways and sliding ways method. Ways and blocks were positioned on the drydock before the tanker was docked. Then the ship was floated in and landed on the keel blocks. After she was cut in half the same ground ways procedure of launching a vessel was carried out during the time she was pulled apart. This included fitting all skin blocks, wedges, and ramming up and splitting out of all keel blocks.

The tanker was pulled apart by means of one of the drydock wing-wall capstans, which in this case exerted a pull of approximately four tons. Before she was cut in two all necessary bench marks for the center line and horizontal water line had been put on the vessel with a surveyor's transit. These marks were then again checked and held in position during assembly of the 30-foot section between the two parts of the hull. The new section was completely fabricated by the yard.

Associated piping for the new cargo tank was then installed, and crews quarters and other accommodations were converted from Navy type to standard merchant type.

The TYCOL's stern tube was changed from a roller bearing to a lignum vitae bronze sleeve bearing. The combination thrust and roller bearing was also removed and a new Kingsbury thrust and thrust shaft installed. This change necessitated complete removal of the old stern tube and fabrication and installation of a new stern tube of greater size.

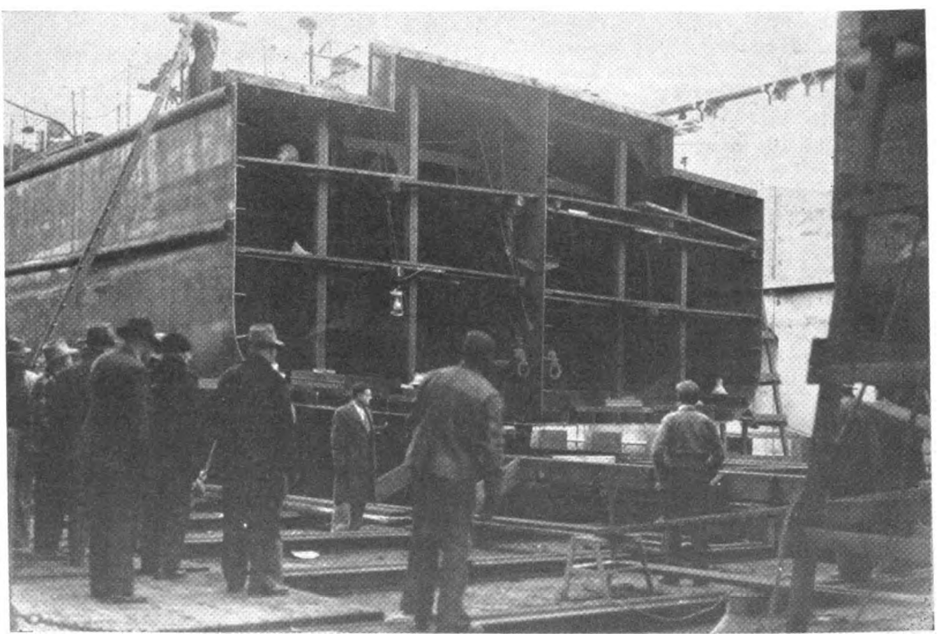
The interesting job was arranged by Richmond K. Kelley, of New York City, assistant vice president in charge of Eastern District and marine manager of Tide Water, who dispatched Charles Mellendeck, assistant marine superintendent of the company, with headquarters at Bayonne, New Jersey, to the San Francisco Yard to personally supervise the work.

Tide Water Associated Oil will place the newly lengthened and converted tanker in its refined products trade on the East Coast. She will run from New York to Boston and Providence.

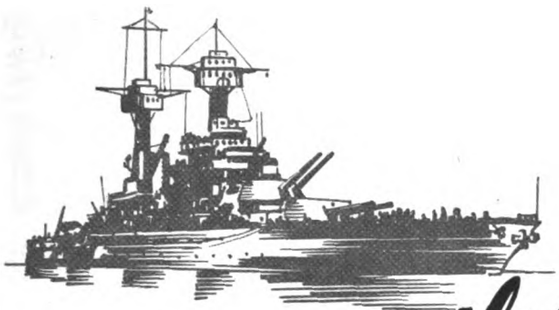
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Memorial funds were subscribed in San Francisco for two members of the marine fraternity who died recently. One was collected by a committee headed by E. T. Senter, marine superintendent, Grace Line, for the late Joseph D'Acquisto of Marine Service Co. and the other was collected under the direction of Gustave Janson, United States Maritime Commission, for the late James A. George of the Commission staff. The D'Acquisto fund was presented to the Guide Dogs for the Blind, San Rafael, and the George fund went to the Shriners Hospital for Crippled Children, San Francisco.

AFTER BEING FLAME cut completely around at midship section, the vessel is pulled apart with capstan and snatch block. Forward section is on sliding ways.



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On Battleship or Tanker



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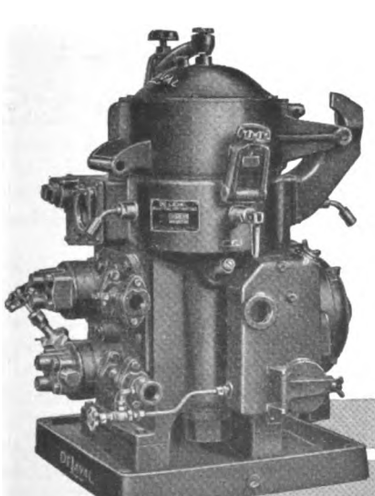
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On board ship the advantages of doubly protecting engines or turbines are especially apparent, for at sea there is no practical means other than centrifugal purification for removing water from oil. Danger of dirty oil forming an emulsion with water is practically eliminated when De Laval Centrifugal Force is used. This benefit is emphasized by recently developed heavy Diesel oils.

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

San Francisco Engineers Have Record Attendance

A record attendance of 76 turned out for the April meeting of The Society of Port Engineers, San Francisco, to hear Jack Crose, Gisholt Machine Co., talk on "Dynamic Balancing of Rotating Parts," with illustrative slides.

Dinner host for this meeting was William Beck, Dahl-Beck Co., San Francisco marine electricians, who have two Gisholt dynamic balancing machines in their plant.

Harbor Supply Co., San Francisco, will present the program at the May meeting, showing a picture titled: "The Manufacture of Metal Bellows and Temperature Regulators" prepared by the Fulton Sylphon Division of the Robert Shaw-Fulton Co., for which Harbor Supply Co. is a marine distributor.

Present at the May meeting of the San Francisco Society was Ernest L. Thearle, brother of Phil Thearle, superintending engineer of the United States Army Transport Corps at Fort Mason in that city and former president of the San Francisco Society. Ernest Thearle recently retired after serving 20 years with General Electric Co. at Schenectady, N.Y. as head of the mechanical engineering research laboratory. Previously he taught mechanical engineering at Cornell University and was head of the department of mechanical engineering at the University of Arkansas.

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The Society of Port Engineers, Los Angeles, has announced a vacation period for this summer and will hold no meetings in July, August or September.

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Early Reservations Stream In For NA National Spring Meeting

Early reservations indicate an excellent attendance from east and west at the Spring Meeting in San Francisco May 12 and 13 of The Society of Naval Architects and Marine Engineers, the first national gathering of this organization ever held on the Pacific Coast.

John B. Woodward, Jr., president and general manager of the Newport News Shipbuilding and Dry Dock Co., and president of the society, will head the delegation from the Atlantic Coast and preside at the meetings.

Other outstanding eastern marine men who sent early reservations include J. Lewis Luckenbach, New York, president of the American Bureau of Shipping; Admiral Joseph F. Farley, commandant of the United States Coast Guard; Rear Admiral H. C. Shepherd, chief of the Coast Guard Office of Maritime Safety; L. R. Sanford, executive vice president of the Shipbuilders Council of America, New York; H. P. Bish, manager of the Aircraft, Federal and Marine Division of the General Electric Co., Schenectady, N.Y.; Frank R. Benson, chief engineer, Newport News Shipbuilding and Dry Dock Co., W. E. Colley, Kingsbury Machine Works, Philadelphia; Walter I. Green, vice president of the American Bureau of Shipping; Charles H. Johnson, manager, marine department Combustion Engineering Co., New York; I. W. Jackman, manager, marine department Worthington Pump and Machinery Corporation, Harrison, N.J.; J. H. King, vice president, Babcock & Wilcox Co. and treasurer of the society, and Captain Wilbur N. Landers and Arlo Wilson, secretary and assistant secretary, respectively, of the Society.

Large delegations, too, are expected from the Pacific Northwest and Southern California Sections of the Society, as these two groups are co-hosts, with the Northern California Section, of the Spring Meeting.

Banquet speaker for the meeting will be Dr. Lee A. Du Bridge, president, California Institute of Technology.

H. B. Stewart, Bethlehem, San Francisco, new chairman of the Northern California Section, announces the next meeting of his group will be held May 31 and the speaker will be R. J. Brown, assistant turbine engineer for the General Electric Co. at San Francisco, who will discuss a phase of steam plant operation.

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Port Stewards Plan Annual Picnic

Tom Taylor, Pacific Far East Line, San Francisco, is chairman of a committee in charge of the annual picnic of the Port Stewards' Association of the Pacific Coast to be held at Tourist Park, Oakland, Sunday June 26.

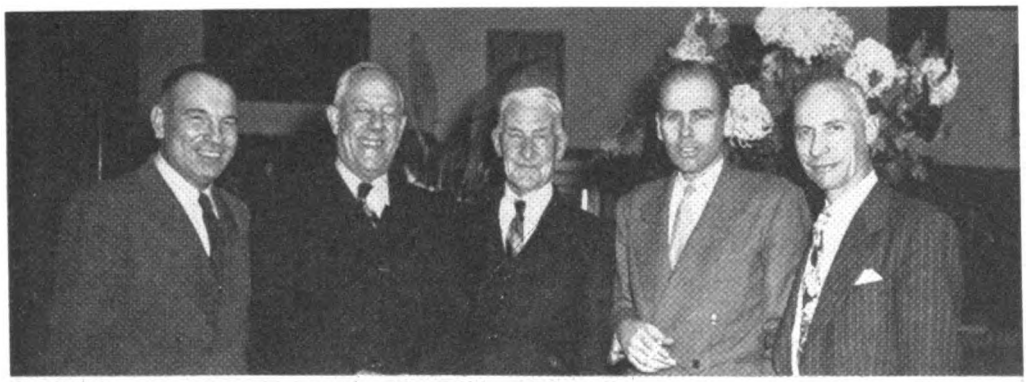
E. M. Blank, Pope & Talbot Lines, president of the association, announces that August 25th has been set tentatively as the date for the annual fall banquet and barbecue at the Green Hills Country Club, Millbrae, with Lieutenant Frank B. Ingham, U. S. Maritime Service, as chairman. Mr. Ingham is head of the commissary at the Maritime Service Academy at Alameda.

Timothy Mullins, American President Lines, retiring president of the association, was presented with a brief case at the April meeting of the group.

"Steam for Power," the new sound and color moving picture produced by The Babcock & Wilcox Co., was shown at the dinner meeting of The Society of Marine Port Engineers, New York, N.Y., Inc., with several Babcock & Wilcox men present.

In the picture left to right, GEORGE MATTUCCI, Asst. Manager, Marine Dept., Babcock & Wilcox; HENRY S. CABLE, Superintendent Engineer, Isthmian Steamship Co.; GEORGE GALE, honor guest, for thirteen years chief engineer of the SS DIXIE of the Morgan Line and now retired; GEORGE H. HODGES, Manager, Marine Dept. and ALFRED G. GALE, Head, Marine Service Dept., The Babcock & Wilcox Co., and son of George Gale.

PART OF THE RECORD-BREAKING attendance at the April meeting of the Port Engineers' Society at San Francisco, lower photo.





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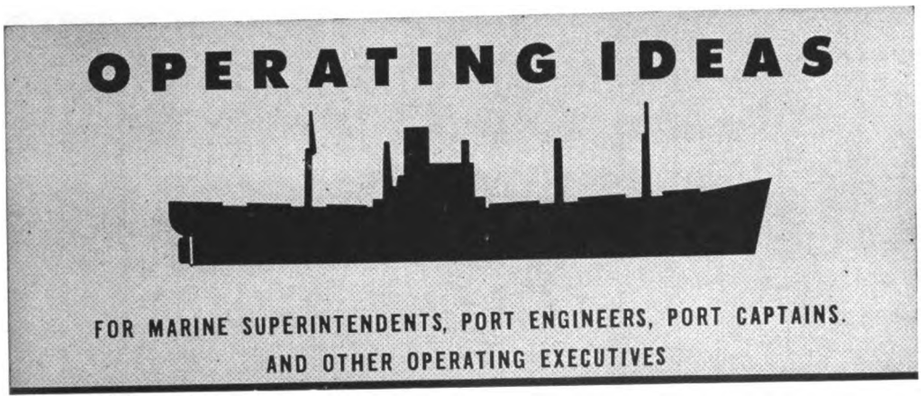
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NEW COMPOUND PREVENTS LP EVAPORATOR SCALE

Exhaustive tests of Hall Laboratories, new "Hagevap" show low-pressure evaporators can be kept scale-free although operated in excess of rated capacities for long periods. Cost runs from 1½c to 3c per ton of fresh water produced.

Low pressure evaporators for producing fresh water aboard ship can now be operated at rated or in excess of rated capacity without the formation of scale through the use of "Hagevap" LP Evaporator Compound, recently introduced by Hall Laboratories, Inc. subsidiary of The Hagan Corporation of Pittsburgh. Bull & Roberts, Inc., consulting chemists, representatives of Hall Laboratories, conducted the pre-marketing tests and are supervising the use of "Hagevap" aboard Atlantic Coast vessels.

Minimizing the human element in low pressure evaporator operation, "Hagevap" promised to eliminate frequent costly mechanical or chemical cleanings. Priming is eliminated when the compound is used.

The original treatment rate was seven pounds of compound while current tests now show 3½ to 4 pounds per 100 tons of fresh water product to be sufficient. From October through March (when this was written) "Hagevap" compound was used aboard the American Export Lines "Four Aces" in Bethlehem low pressure evaporators with rated capacities of 16,000 gallons per day each. With the evaporators operated at from 110 to 135 per cent of rated capacity, the compound was used at the rate of from 3½ to 4 pounds per 100 tons of fresh water produced and the evaporators remained scale free.

The cost is now down to 1½ cents to 3 cents per ton of fresh water product, according to Bull & Roberts, Inc.

Prior to the use of "Hagevap" aboard the "Four Aces," exhaustive tests were run aboard the MARINE TIGER, MARINE CARP, MARINE FALCON and MARINE PERCH, operated by Agwilines, Inc., American Export Lines and American President Lines, with the results shown in the accompanying table.

The new compound is the result of research begun in 1945 by Hall Laboratories to find a chemical means of assuring scale free operation of low pressure evaporators at full "clean tube" rating, with the undesirable characteristics of starch-phosphate mixtures eliminated. In May, 1947, Bull & Roberts chemists began shipboard trials of a new chemical compound with the MARINE TIGER, a C-4 austerity passenger vessel, then operated by Agwilines, Inc., as the guinea pig. Tests were run aboard this and the other three vessels with several mixtures and adjustments made until "Hagevap" LP was finally developed.

Tests by the U. S. Navy in 1940 and 1941 had shown that continuous injection of dilute corn starch solutions would reduce scale formation to a marked degree if carefully controlled procedures were followed. Later work by Hall Laboratories and Bull & Roberts, Inc., showed good results could be obtained with mixtures of glassy sodium phosphate, corn starch and caustic soda.

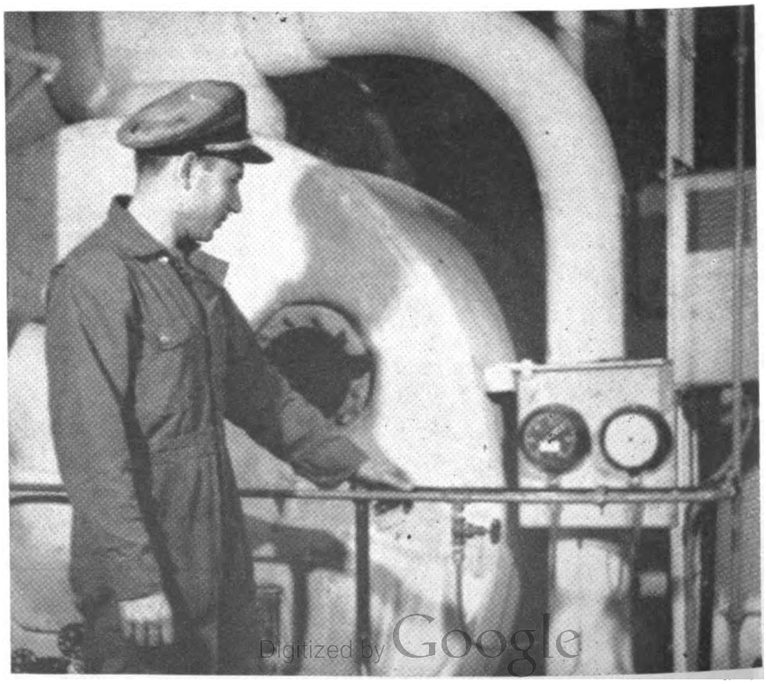
None of these were without disadvantages. Starch solution tended to settle out, plugging lines and valves. Or, if mixed sufficiently dilute, they had to be replenished every few hours. In addition, although starch suppressed foaming and carry-over of impurities into the distillate to a noticeable degree, it did not do this well enough, with the result that brine levels had to be kept down so that up to 30 per cent of the evaporative capacity of the units had to be sacrificed in normal operation. "Hagevap" LP compound showed in the tests that it possessed all of the advantages and none of the disadvantages of the earlier mixtures.

Prior to the use of "Hagevap" LP engineers of the MARINE PERCH had noted a loss of power available to the propeller equivalent to two revolutions with both evaporators operating. Now, using only the one evaporator to produce the same quantity of water, an average of one revolution was regained. (This was also noted aboard the MARINE CARP after changing to "Hagevap" LP beginning with Voyage 14).

The observations would indicate a seemingly impossible 40 per cent increase in water production while steam consumption for one evaporator remained the same. Implied is a saving of about one ton of fuel oil for every 400 tons of fresh water produced. Exhaustive analysis of the main engine log of the MARINE PERCH indicated savings of about four tons per day, but the chemists concluded that no true evaporator demand for steam could be fixed because of other steam demand variables. The inference was inescapable, however, that high operating brine levels, and scale-free tubes, resulting in efficient use of steam heat in producing product vapor, could be credited with sharply higher productive performance of the units.

Work is currently under way for evaluating similar material for treatment of raw fresh-water feed in the smaller, high-pressure evaporators of merchant vessels and is being supervised by the

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First Assistant Engineer Marken of the ss MARINE PERCH, in front of the starboard evaporator which has consistently produced at 130 per cent of rated capacity since the use of HAGEVAP LP Compound began.

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LOW PRESSURE SALT WATER EVAPORATOR INVESTIGATION

TREATMENT TO PREVENT SCALE AND IMPROVE EFFICIENCY IN FOSTER WHEELER N-20-2 20,000 GALLON DOUBLE EFFECT UNITS

BULL AND ROBERTS, INC.

VESSEL	Voy No.	Average Water Production per day per Evaporator	Percent of Rating	Av. Steam Temp to 1st Effect	Overboard Brine 32nds	System For Chemical Feed	Treating Chemicals, lbs. Per Day Per Evap. Lbs.	Type	Tube Condition at Start of Voyage	Tube Condition at End of Voyage	Remarks
RATING		83.4 Tons	100	227 °F	1.50	Suction to First Effect	None Specified		Slight Scale Assumed	Slight Scale Assumed	
MARINE TIGER (Agwilines)	1	91.7	110	222	1.25	Suction 1st Effect	6	HALL MTS	Scale Free	Scale Free	
	2	90.0	107	220	1.20	Suction 1st Effect	10	HALL MTS	Scale Free	Scaled Lightly	Chem. feed not Continuous
	3	84.2	101	223	1.25	Suction 1st Effect	12	HALL MTS	Light Scale	Scale Flaking	
	4	62.5	75	220	1.30	Suction 1st Effect	12	HALL MTS	Scale Flaking	New Scale	Chem. feed not continuous
MARINE CARP (American Export)	10	51.9	62	218	1.40	Suction 1st Effect	3	Hagen Phosphate	Scale Free	Light Scale	
	11	62.5	75	218	1.40	Suction 1st Effect	3	Corn Starch	Light Scale	Scale Flaking	Operation Good
	12	62.0	75	No Data Kept		Suction 1st Effect	Same as above		Scale Flaking	More Scale	
	13	73.0	88	220	1.42	Suction 1st Effect	Same as above		Light Scale	Heavier Scale	
MARINE FALCON (American President)	17	76.0	91	225	1.35	Force Feeding	1.5	Hagen Phosphate	Scale Free Throughout All Voyages		Operation Excellent
	18	No Records Kept During Voyage					3.0	Soda Ash			
	19	76.5	92	225	1.30	Force Feeding	5	Corn Starch			
MARINE PERCH (American Export)	20	88.6	106	229	1.50	Suction 1st Effect	10	HAGEVAP LP	Very Heavy Scale	Scale Flaking	
	21	76.8	92	281	1.40	Suction 1st Effect	10	HAGEVAP LP	Scale Flaking Chemically cleaned	Large Flaking Scale Free	
	22	109.5	131	226	1.47	Force Feeding	10	HAGEVAP LP	Scale Free	Scale Free	Operation Excellent
	23	109	131	225	1.44	Force Feeding	7	HAGEVAP LP			

Maintenance Engineering Corporation in the Gulf, and by Bull & Roberts in New York.

* * *

Accident Prevention from the Operator's Viewpoint

By E. V. LEWIS
Naval Architect
George G. Sharp

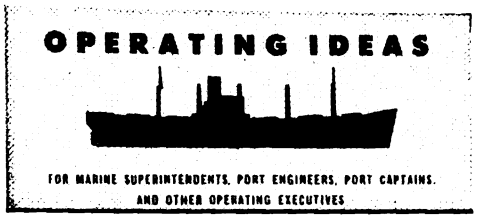
The importance of accident prevention aboard ship is well recognized and has been receiving special attention recently in marine circles. A number of organizations have been doing very valuable work in encouraging safety engineering —including the Marine Section of the National Safety Council, the Pacific Coast Marine Safety Code Committee, the Lake Carriers' Association, the U.S. Coast Guard and various insurance underwriters on both the Atlantic and Pacific Coasts. Some of these organizations sponsor periodic safety conferences and all distribute helpful literature on accident prevention. Since the available material is quite voluminous, it is proposed here to summarize in outline form some of the underlying principles of a marine safety program. It is hoped that this summary will serve as an introduction to those who are beginning a study of the subject and as a handy reference or check list for those who are already familiar with the field. For a detailed discussion the reader may refer to the paper presented by Captain Edward C. Holden, Jr., at the March meeting of the Metropolitan Section, Society of Naval Architects and Marine Engineers.

Psychological Aspects

The basic objective of a marine safety program is the training of personnel in safety principles. This requires an awareness of the importance of safety on the part of management first in order to instill it in the ships' officers and crews. Every man on board every ship must be made to realize that accidents can be avoided and accordingly he should conscientiously work and act safely at all times.

1) ORGANIZATION AND PLANNING
A responsible official acting as safety engineer in cooperation with a shore safety committee of management and

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supervisory personnel should plan and execute the safety program. A safety committee should then be set up on each ship composed of deck and engineer officers and the chief steward.

2) INSTRUCTION—One of the first steps of the organization described above should be the instruction of personnel in safe practices, in the use of safety equipment and in recognizing and correcting unsafe conditions on board ship. This is particularly important for new men.
3) DISCUSSION—Both shore and ship safety committees should have regular meetings, mainly to promote discussion of safety problems, thus encouraging suggestions and keeping the subject constantly in the minds of all.
4) REMINDERS—Posters, warning signs and regular safety letters are helpful reminders to personnel.
5) INSPECTIONS — Periodic inspections by the safety engineer and by members of the ship's own safety committee should be made for the purpose of finding and correcting unsafe conditions. Further details on this point are given below under Unsafe Physical Conditions.
6) INVESTIGATION OF ACCIDENTS When an accident does occur it is of the utmost importance that an accurate report be prepared by the Master, and where the accident is at all serious, or potentially serious, a careful investigation should be made. The aim should be to determine means of avoiding future accidents in any ships of the fleet rather than to fix immediate blame on some one.

Unsafe Physical Conditions

Accidents to personnel may be classified as follows:

1) Falling
2) Being struck by objects
3) Burns and electrical shock
4) Injuries from tools or machines
5) Asphyxiation

There are many specific things which can be done aboard any ship to reduce the likelihood of each type of accident. A tour of inspection with the following points in mind is apt to reveal a number of ways in which safety improvements can be made. These points apply equally to decks, holds, machinery spaces and accommodations.

1) FALLING ACCIDENTS
Obstructions: Wherever men work, walk or climb, obstructions on decks or bulkheads must be kept to a minimum. Wherever an obstruction cannot be avoided, it should be identified by contrasting paint or protected by guard rails, hand grabs or other appropriate measures. Coamings at doors and ladders are particularly hazardous.
Footholds: Non-slip walking surfaces should be provided throughout all accessible parts of the ship—non-slip deck coverings in interior spaces which may be wet, non-slip treads on ladders and stairways, safety treads at doors and at top and bottom of ladders, good drainage for wood decks, well secured carpets, narrow slots in deck gratings, etc. Sloping ladders should be no steeper than necessary and vertical ladders should have ample spacings from bulkheads. Sturdy berth ladders should be provided for passengers' access to upper berths.
Handholds: Railings and hand grabs should be provided throughout the ship — at ladders, stairs, manholes, edges of platforms or decks, hatches and other deck openings, in interior passageways, showers, upper berths, etc. and on mast cross trees. Means should be provided for rigging life lines over deck cargo and on weather decks in heavy weather. In short, wherever men may work, walk or climb, there must be a firm handhold available.
Illumination: Good lighting should be provided for all spaces, with extra light at critical points—as at heads of stairs and ladders, at deck obstructions such as coamings, etc. An ample number of flashlights of both regular and safety type should be available.
Rigging of Stagings, etc.: Good equipment should be provided, well maintained, for access, painting and other work overside and aloft—accommodation ladders, gangways, stagings, bosn's chairs, etc.—with good Jacob's ladders for access and life lines, life rings and safety belts. Permanent ladders and platforms should be provided for access to all valves and units of machinery requiring servicing.

2) BEING STRUCK BY OBJECTS
Maintenance of Gear: All rigging, cargo handling gear and moving equipment should be maintained in good working condition at all times. Allowable loads should be clearly marked on each boom, davit, etc. Beckets should be fitted on all mooring lines. In addition to their other advantages, separate topping lift winches are a real safety feature.
Visibility: Operators of winches, windlass and other machinery should have complete visibility of all operations under their control.
Clearances: Arrangements should permit those engaged in cargo handling and similar operations to keep clear of moving gear—even if there should be a rigging failure. In particular, men should not have to work inside the bight of a line without special protection. For those not engaged in the work a clear, safe passage should be provided at all times. Doors should not open into passages, and all weather doors should be fitted with door closers of ample size.
Preventing Dislodgment: Any object which may be dislodged by moving gear should be firmly secured—e.g., hatch beams which must be left in place while working cargo through part of a hatch, and hinged covers in open position. Hatchboards in each hatch should be interchangeable. Means should be provided to prevent accidental release of lifeboats.
Securing Movable Objects: Cargo handling gear not in use, furniture, baggage, stores and all other movable objects should be firmly secured against movement of this ship.

3) BURNS AND ELECTRICAL SHOCK
Maintenance of Equipment: All electrical wiring, steam piping and fittings should be kept in good condition.
Protection from Hot Surfaces and Wiring: Throughout the ship working spaces and passages should have protective rails, shields and/or insulation. High voltage conductors and high temperature piping should have protective arrangements even if not ordinarily accessible to crew. Electrical switchboards require special precautions.
Fire Prevention: This is a complete subject in itself, but it may be summarized as follows: keep sources of fire to a minimum, and maintain all detecting and extinguishing equipment in good order at all times.

4) INJURY FROM TOOLS AND MACHINES
Selection: The right tools should be available for every type of work to be done on board ship, including davits or tackle for all heavy lifts.
Protection: There should be appropriate protective devices for all moving parts and suitable gloves, goggles, etc. for the men. Oiling should not be required during operation of any machine.
Illumination: Adequate lighting should be provided, either permanent or portable, wherever work of any kind is to be done.

5) ASPHYXIATION
Exits: Clearly visible, unobstructed exits should be provided from all tanks and compartments. Alarms in refrigerator boxes should be tested frequently.
Gases: Spaces in which dangerous gases may occur—such as refrigeration machinery rooms and CO_2 rooms should be capable of being closed off, with vents to atmosphere.
Emergency equipment: Lifelines, safety belts, gas masks, breathing apparatus, etc. should be provided and kept in good condition.

Conclusion

Unsafe physical conditions have received particular attention here, since they are within the sphere of the naval architect. However, as suggested at the beginning of the article, there remain the vitally important problems of training personnel in safe practices and the proper use of equipment referred to.

Where a concrete safety program has been set up, taking into account both the psychological and physical aspects of safety, the number of accidents in any fleet is certain to be reduced.

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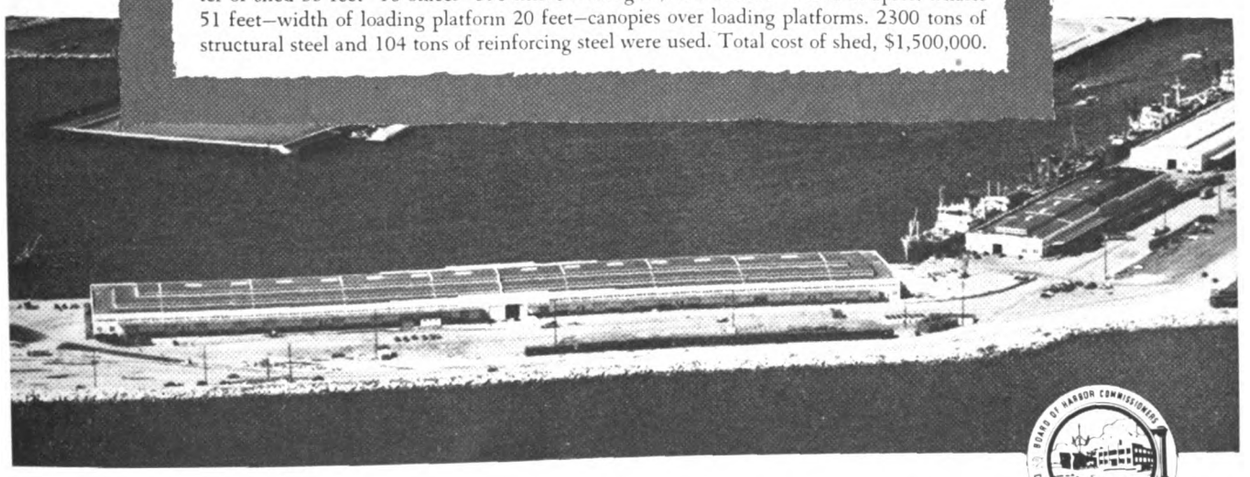
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The length of the shed is 1152 feet—width 200 feet—gross area 5.36 acres—clearance in center of shed 33 feet—16 offices—358 inside floodlights, 134 outside—width of apron wharfs 51 feet—width of loading platform 20 feet—canopies over loading platforms. 2300 tons of structural steel and 104 tons of reinforcing steel were used. Total cost of shed, $1,500,000.



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DAMAGE from improper stowage with conventional shoring-up methods.

New Shoring Clamp Eliminates Damage From Improper Stowage

By WILLIAM H. CLARK
Pacific Coast Operating Manager
Moore-McCormack Lines, Inc.
Inventor of the new Clark Shoring Clamp

A new and more economical method of securing cargo aboard ship has been developed in recent months on the Pacific Coast, and its users include a number of steamship companies and the Naval Supply Depot at Oakland. This shoring procedure has been built around the Clark Shoring Clamp and the experience of its users bears out the enthusiastic claims of its distributors.

During the war years, steel strapping was used to good advantage in securing deck loads, but did not come into its own for underdeck stowage until the advent of the Clark clamp. In designing this, I was looking for a better, cheaper and faster method of shoring off cargo in the holds of our Moore-McCormack vessels and our first clamps were tested in actual shipboard use for more than 35,000 miles before being offered to other lines.

It is claimed this new procedure saves money on labor and materials and makes for speedier vessel dispatch, because most of the shoring-off work can be done as loading progresses. It is asserted, too, cargo secured in this way remains secure under weather conditions which would bring about shifting of cargo shored off in the older method.

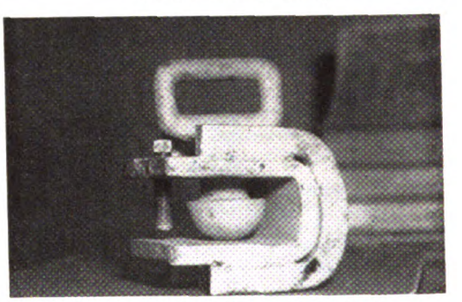
Officers of one ship using this new method reported she rolled as much as 30 degrees without dislodging shelter deck stowage of goods in paper cartons, bagged cargo stowed 12 feet high 'tween decks and timbers ranging in size from 12″x12″ to 30″x30″ stowed seven feet high on the shelter deck. These timbers had been secured with twelve Clark clamps and six steel bands.

On this same vessel, 18 man hours of labor, by one of the mates and two sailors, sufficed for securing four shelter deck compartments of timbers, one shelter deck compartment of paper and two 'tween deck compartments of bagged cargo. Had old-style wood shoring been used, the securing of the four shelter deck compartments of timbers alone would have required an estimated minimum of 48 man hours, and, at following ports, if cargo was to be loaded into the 'tween decks or lower holds, extra labor would have been required for the removal of the diagonal shoring in the hatch squares and its subsequent rebuilding, with delays to the vessel.

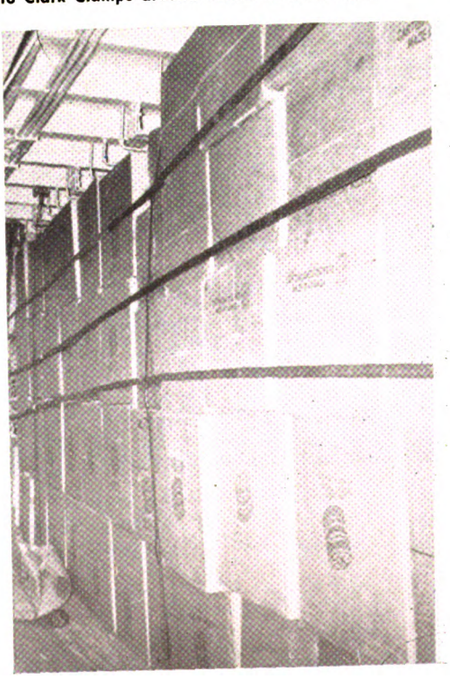
One of the undesirable features of the old method of shoring cargo is that when the job must be left to unskilled labor, there is always the hazards of nails being driven into cargo. This danger is eliminated when steel band shoring is used, and the tools needed for the latter are so simple to operate that skilled labor is unnecessary.

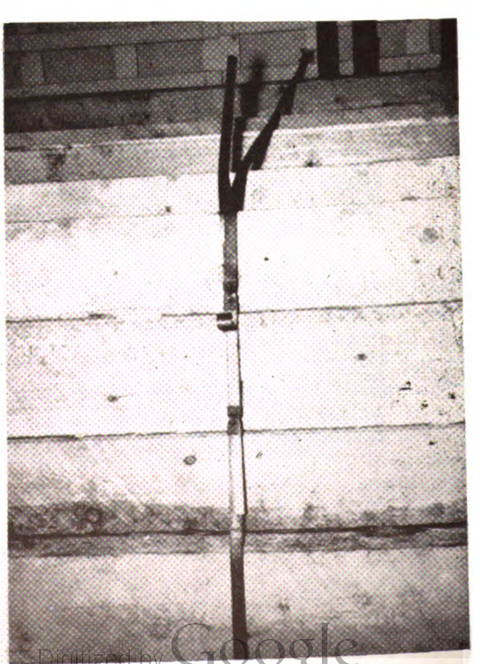
Simple, too, is the method of installing Clark clamps and the steel strapping in the hold. The clamps are made fast to frames along the vessel's sides and a steel band is run from each clamp to the hatch opening. The clamps, with the bands attached, are spaced every three frames, or 90 inches apart. Dunnage is then laid over the bands and, after the cargo has been

The Clark Shoring Clamp.



Showing method of webbing steel strapping around cargo of light case goods, left; Steel strapping attached to Clark Clamps around 12x12 timbers, right.





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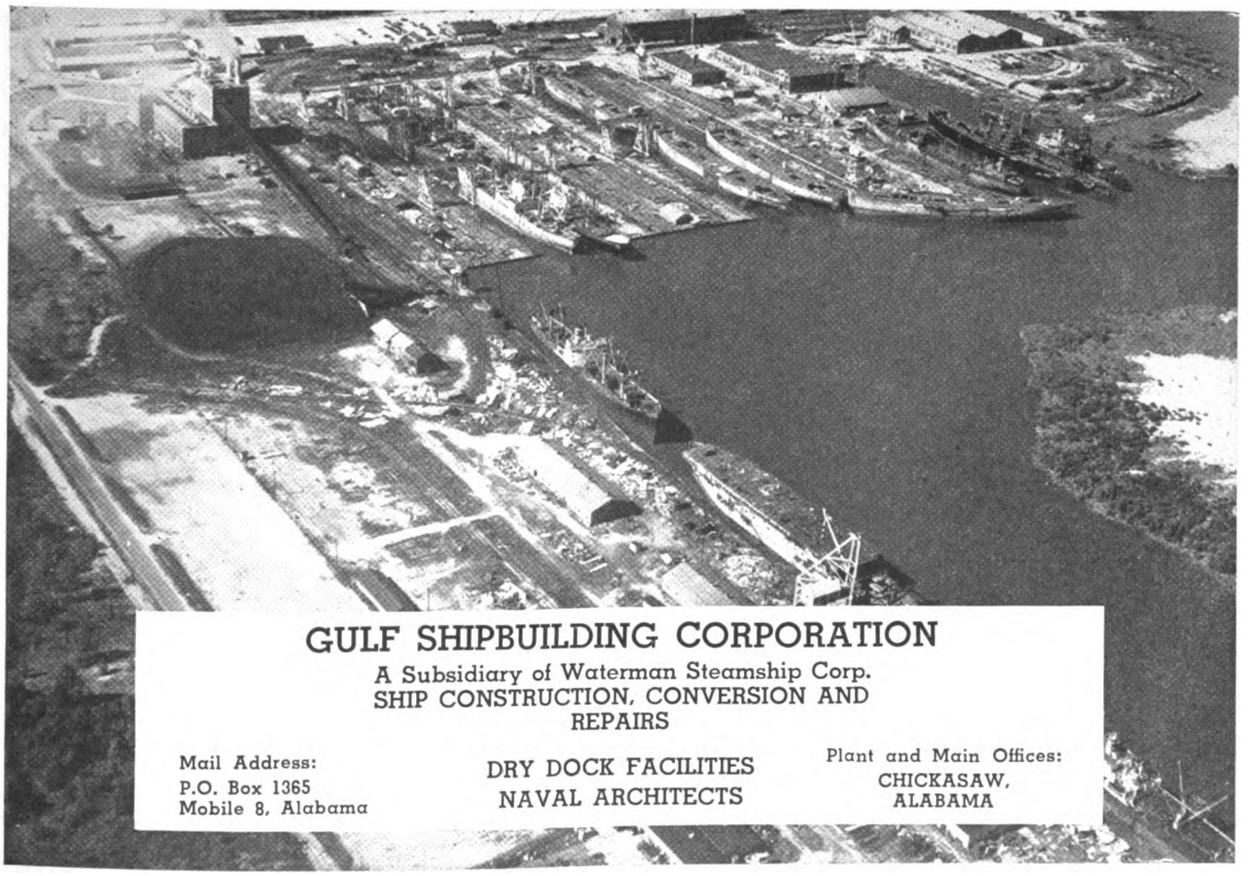
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OPERATING IDEAS



FOR MARINE SUPERINTENDENTS, PORT ENGINEERS, PORT CAPTAINS AND OTHER OPERATING EXECUTIVES

stowed, clamps with bands attached are fastened to beams overhead. Then the matching deck and overhead bands are snugged-in and sealed together.

In this connection, it should be noted considerable latitude is possible in the placing of the overhead clamps, since the bands may be run at any angle with complete security—the greater the torque on the clevis, the tighter the clamp binds on the frame. In most cases, a steel band placed horizontally across the face of a block of cargo, and fastened to the vertical bands by means of special intersectional seals, will obviate the need for a "dunnage fence" within the steel bands.

It may be mentioned here that while the economy of this new system is stressed by its advocates, they point out that in order for an operator to achieve the maximum possible saving in shoring costs, which they say can amount to as much as 50%, it is necessary to lay out the anchor ties in advance through the deck areas in which cargo is to be secured. Ordinarily, this work would be directed by the ship's officer or member of the shore staff in direct charge of loading operations, after that individual had studied the proposed stowage plan—or the cargo on the dock, as the case might be.

The plaint of steamship operators for these many years, has been that increased costs and decreased productivity of labor have combined to worsen their already disadvantageous position in this highly competitive world industry. Any development, therefore, which tends to increase efficiency while cutting costs should be warmly welcomed by our steamship fraternity. It has come to our attention that two foreign lines have already taken advantage of the improved shoring procedure described in this article.

The Clark Shoring Clamp is manufactured and distributed by the Don D. Fleming Co., San Francisco marine supply house, and Signode steel strapping has been used by all the operators so far. Signode rents a sealing tool for this operation, at low cost and keeps the tool in good repair at no charge to the operators.

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METHODS OF FIRING PULVERIZED COAL

By OTTO de LORENZI*

Director of Education for Combustion Engineering Company, Inc.

The use of motion pictures to record furnace conditions in steam-generating units provides the combustion engineer with a valuable research tool. Through the use of these pictures it is possible to study the succession of events which occur during the entire combustion process. The photographic technique employed must be well adapted to the type of action it is desired to portray. With stoker fuel beds, which move at an extremely slow rate, the time-lapse system is used whereby individual pictures are taken at predetermined time intervals and then projected at normal rates to speed-up the fuel bed without actually changing normal operation. For the study of flame propagation or gas flow, it is necessary to slow down the action if an accurate analysis is to be made. This is accomplished by using semi- or ultra-slow motion. With this method the film passes through the camera at a predetermined high rate and is then projected at normal speed to reveal many interesting factors that have an important bearing on furnace performance.

Successful pulverized fuel firing depends on a uniform distribution of fuel and air across the furnace width to insure prompt ignition, and completion of the combustion process, before the heating surfaces of the boiler are reached.

Three Methods Available

The three methods now available for pulverized coal firing are the result of improvements in burner design. Each of these is classified according to the manner in which fuel is introduced into the furnace and these may be listed as follows: vertical, horizontal turbulent and tangential firing.

With vertical firing several small burners, placed side by side on close centers, fire downward through an arch into the furnace cavity. Uniform distribution over the furnace width is thus easily obtainable. All of the earlier installations, many of which are still in operation, used this method of firing.

Horizontal turbulent firing was developed in conjunction with direct firing systems. Relatively large burners, located in the front wall of the furnace, are used. Uniform fuel distribution of fuel is obtained by rapidly spinning the coal and air stream, thus causing them to spread over the furnace width.

Tangential Firing

Tangential firing is the latest development and is especially well adapted to large capacity steam generating units. Burners are located in the four corners of the furnace, and the fuel and air stream are directed toward the furnace center. Intense turbulence is set up at the point where these streams meet, and thus combustion process is quickly completed. Recently, tangential firing, has been further improved through the use of vertical burner adjustment. With this arrangement, it is possible to selectively position the zone of intense turbulent combustion so that a part or all of the furnace volume and furnace cooling surfaces are in use. As a result of the optional control, it is possible to regulate furnace outlet temperature over an appreciable range. This range in furnace temperature is sufficient to maintain constant superheated steam temperature from 1/5 load to full load.

The manner in which air and fuel are brought together in the throat of a burner governs the turbulence of the mixture as well as the completion of the combustion process. Ignition is prompt and the succeeding reactions follow in such rapid sequence that it is difficult to describe the occurrence of progressive events through normal visual observation. The ultra-speed motion picture camera, however, is a valuable research tool which will enable leisurely and thorough analysis of burner operation, and may thereby provide a guide to design changes that will result in better and more efficient performance.

The effectiveness of this analysis method is demonstrated by a series of motion pictures in Kodachrome. Camera speeds of from 64 to 2000 frames per second were used, and as a result the action is slowed down from 4 to 250 times.

*An abstract of the talk presented by Mr. de Lorenzi at the March 22nd meeting of the Philadelphia Section of The Society of Naval Architects and Marine Engineers.

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Commercial Ship Converts Two LSM's to Lumber Carriers

Commercial Ship Repair, Inc., San Francisco, is at work at the foot of 16th Street in that city on a $92,000 job converting an LSM into a coastwise lumber carrier for W. R. Chamberlin & Co. This is the first of two such jobs for the Chamberlin firm. Other companies, including the Coastwise Line, are contemplating similar conversions.

The vessel, to be named the C-COASTER, is powered by a pair of Fairbanks-Morse Diesel engines, driving twin screws, and included in her equipment are two Sharples oil purifiers.

Naval architects for the conversion are Pillsbury & Martignoni, San Francisco. The vessel will carry no cargo gear, as the lumber, packaged, will be loaded and unloaded by shoreside cranes.

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Formation of three steamship corporations in India has been proposed as a means toward expanding the Indian merchant marine.

The formation of the first of these organizations immediately has been approved by the Indian parliament's finance committee and in connection with this there has been a number of talks with American and British representatives on the question of securing tonnage.

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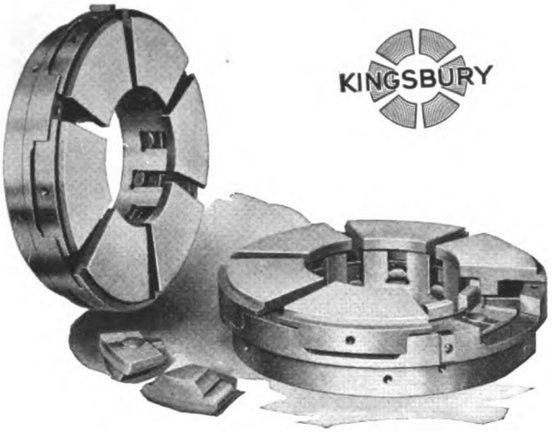
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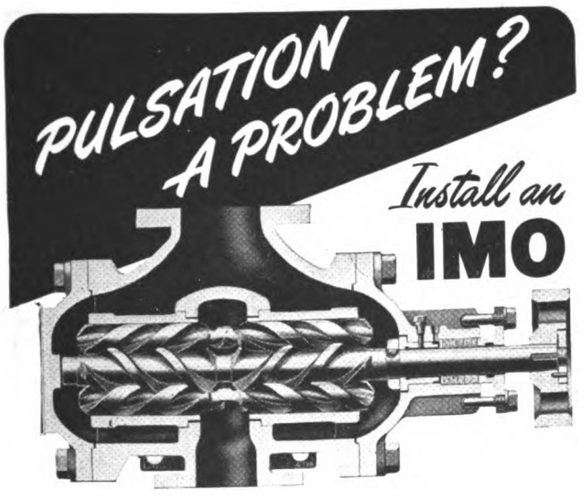
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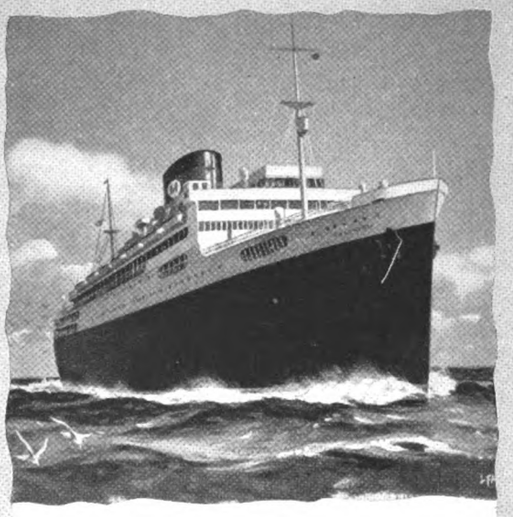
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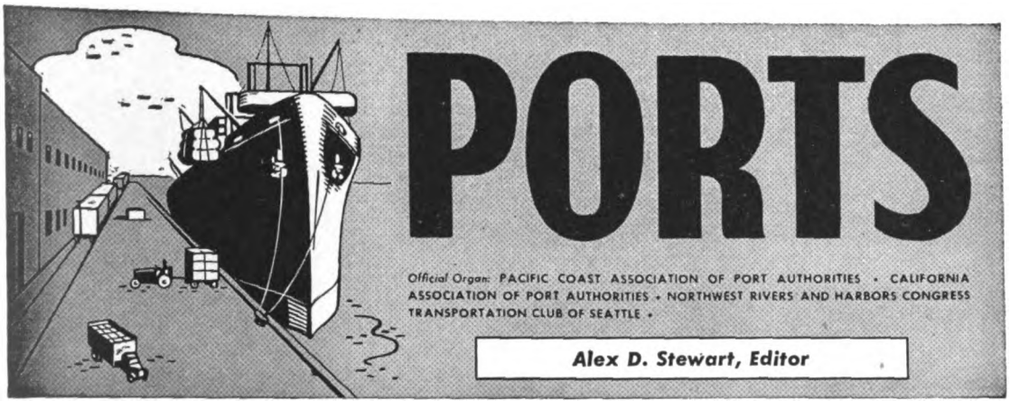
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Alex D. Stewart, Editor

Port of Houston Expands With Opening of New York Office

The Port of Houston, reaching out for a greater share of shipping controlled by Eastern interests, will open a New York City cargo solicitation office.

In charge of the office will be William W. Richards of Kansas City, formerly sales manager for the Flour Mills of America.

R. T. Behannon, general manager of the Houston Port and Traffic Bureau, announced the decision to open the Manhattan office which will supplement similar offices in Kansas City and Houston.

The port has made rapid progress in the first two months of this year in its drive to become the nation's second port, according to the Port and Traffic Bureau.

Traffic through the port for the first two months is more than a million tons ahead of the same period in 1948, Port Director W. F. Heavey has announced.

Reports show commerce for January and February reached 7,183,721 tons, as compared to 6,145,701 tons for the corresponding months last year.

February tonnage was the greatest for that month in the history of the port. It amounted to 3,376,930 tons in comparison with 2,839,306 tons in February, 1948, and 2,510,456 tons in February, 1947.

Increases are being shown in shipments of cotton, chemicals, grain, textiles, fruit and vegetables, Director Heavey said.

"Since most ports experienced a slump in traffic during January and February," General Heavey said, "Houston's busy commerce means we are making real headway in our drive to make Houston second only to New York in the nation."

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J. J. Brune to Head Baltimore Traffic Club

J. Joseph Brune, assistant manager of Waterman Steamship Corp., was elected President of The Traffic Club of Baltimore, Inc., for the year 1949-50.

Mr. Brune is well known in shipping circles, having served in various maritime capacities since 1921. During the war years he served the Baltimore office of the U.S. Maritime Commission as district manager. Prior to that time he was connected with the Pacific Mail Steamship Co., the Terminal Shipping Co., the Baltimore Oceanic Steamship Co., the American Export Lines and R. A. Nicol & Co., agents of the Quaker Line.

Brochure on Facilities At Portland Issued

"The Port of Portland and Its Facilities" is the title given to a new, 30 page mimeographed brochure recently completed for distribution to producers and shippers in mid-west and eastern trade areas.

Another booklet is the Port of Portland Commission Biennial Report, 1947-1948, to the 45th session of the legislative assembly of the State of Oregon. Total assets and capitalized development are shown at $10,721,305.06. The Port of Portland owns a dredge plant, a towboat, dry docks, airport lands, and industrial properties. Public owned terminals are owned by the city and operated under supervision of the Commission of Public Docks, a municipal entity.

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Port of Long Beach Installs Port Radar Control System

Marking a major advance in navigational aids, the Port of Long Beach, California, has installed the first port radar control system in the western hemisphere to aid piloting of ships in and out of that port during periods of low or zero visibility and to help pilotage of ships in and about the harbor. It is said the port of Liverpool has the only other similar system.

This installation is expected to eliminate entirely the necessity of ships lying offshore while awaiting the lifting of heavy fog banks which occasionally roll in from the sea.

The radar equipment was furnished by the Sperry Gyroscope Company and the four-foot scanner is mounted atop a 122-foot steel derrick, formerly an oil well derrick, alongside the port pilot station at the southernmost tip of Pier A in the Long Beach outer harbor. The viewing scope and radio telephone equipment is located in the pilot house.

Ships will be "talked" in and out of the harbor by means of a "walkie-talkie" communication system between the pilot, aboard ship, and the master control radio transmitter-receiver station in the pilot station ashore synchronizing its instructions with the ship position shown on the radar.

First, the radar will locate all incoming ships within a radius of 30 miles; second, the shoreside radio will direct the pilot boat, through mobile radio equipment, to the ship and third, the pilot aboard the ship, with his "walkie-talkie" will be guided past all obstacles and through the harbor gate. On ships leaving the port, the program will work in reverse. In addition, the pilot station is equipped with a loudspeaker which can be heard three miles.

The radar equipment will function on the 3 centimeter band, 9275-9475 megacycles. The radio equipment will function on the 152-162 megacycle band, probably at 156.81 megacycles.

The procedure for a ship approaching the Port of Long Beach during a period of heavy fog and resultant low visibility is similar to that employed by airports and the radar system used corresponds to the Ground Control Approach system for aircraft. In reality the G.C.A. is a mobile radar station and even in thick, soupy fog the pilot of the approaching plane is "talked down" the glide path to within 50-feet of the center of the runway. Likewise, the Port of Long Beach radar control station operator will contact the incoming ship after the pilot has boarded that vessel, having been directed to the ship by this same radar installation, and will then maneuver the incoming ship into position for an approach down the entrance fairway, track it in range and bearing, and "talk the ship" into the harbor and to the proper berth. It is reported this radar control will be accurate to within a margin of 50-feet, which is the same tolerance allowed in the radar approach system for aircraft.

This radar installation has been made by the Port of Long Beach as a service to the shippers using the port and there is no additional charge for its use. Surveys have been made of the various shipping firms using the port and the result of these surveys indicate that savings resulting from the elimination of vessel delays and the resultant standby time paid stevedore gangs may run into thousands of dollars.

SHIP-FINDING RADAR unit operating successfully at the Port of Long Beach. The radar unit is installed in the pilot station, shown below, and the scanner is atop this derrick.



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Port of Baltimore Opens Pittsburgh Office

As a first move in its new port expansion program, the Association of Commerce has opened a Port of Baltimore office in Pittsburgh according to G. H. Pouder, executive vice president of the Association of Commerce.

The manager of the office will be Harry E. Zwinggi, who is secretary of the World Trade Council of the Pittsburgh Chamber of Commerce, and has been associated with that organization since 1937.

The opening in Pittsburgh will mark the third out-of-town office established by the Association to work for the Port of Baltimore. A Chicago office has been in operation for two years, and a New York office was opened last September.

"Baltimore's three port offices should provide a comprehensive coverage of the interior territory on which we are so dependent for our progress as a port," Mr. Pouder stated. "The offices will work closely together in the coverage of the eastern and middle western tributary territory, under the coordinated inter-office system which has proved effective as between New York and Chicago. Their work is tied in closely with our main office in Baltimore, and our activity in Washington."

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New Port Manager Named At Everett, Washington

Walter H. Rappuhn has been named to succeed Harry A. Appling as port manager at Everett. Rappuhn was secretary of the Everett Chamber of Commerce for the past five years, coming to that city from Longview.

The Everett Port Commission is composed of J. R. Thompson, Charles E. Swanson, and E. J. Secor.

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Oakland Observes Twenty-Second Birthday

Establishment of the Port of Oakland in 1927 was observed recently at an informal buffet supper at the Oakland airport, with president Claire V. Goodwin presiding. The chairman pointed out that since the formation of the port the port and the airport have come to the forefront as two of the most of the outstanding facilities on the Pacific Coast. He attributed much of the progress to the wholehearted and unselfish efforts of the outstanding citizens who have comprised the board of commissioners through the 22 year period.

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Booklet on Tacoma Is Joint Effort of Labor & Management

A 16 page booklet titled "Maritime Tacoma" has been issued under sponsorship of the Tacoma chapter, International Longshoremen's Association, the Tacoma Chamber of Commerce and the City of Tacoma. Replete with pictures and maps of the harbor and vicinity the pages portray the advantages Tacoma offers to carriers, shippers and distributors.

Opposition to Commission's Proposal to Operate Dry Docks

(Continued from page 38)

$2,400,000 annual saving alleged by the Maritime Commission which the Council claims cannot be realized. It becomes increasingly clear that, regardless of the immediate saving, if any, to the Maritime Commission, the net result of the government can only be a loss, and a heavy loss at that, even without considering the irreparable damage done to national security.

James R. Moore, vice president of the Moore Dry Dock Company, Oakland, Cal., summed up the depressed status of the industry in the San Francisco Bay Area and showed the great harm that would be inflicted on the few remaining ship repairing companies still operating in that area if the Commission should install a competitive dry dock at the Reserve Fleet.

W. Purnell Hall, vice president of the Maryland Dry Dock Company, pointed out that the Commission's plan is contrary to sound public policy, and that, instead of promoting the welfare of the industry, which is one of its functions under the Merchant Marine Act of 1936 which created it, the Maritime Commission proposes to compete with the industry. There can only be one ultimate result to the implementation of such a policy. It leads toward the nationalization of the industry.

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Letter from British Booster Of American Merchant Marine

The National Federation of American Shipping received the following letter from England, in which the writer, Mr. Frank A. Davis, advises that he has sent same to "The President of the United States, to 96 Members of the Senate, and also to the 434 Members of the House."

67 Victoria Road
Chislehurst, Kent
England (Feb. 20, 1949)

Dear Sir:

"Please pardon my addressing you on a matter that is strictly American. I guess that the war years have brought a better and closer feeling of friendship between our two Countries, so hence you have a Limey batting for the AMERICAN MERCHANT MARINE.

I suppose that the three years I served with the Transportation Corps, U. S. Army had a lot to do with my feelings of respect and admiration for the Merchant Marine flying the Stars and Stripes.

I have seen the merchant ships of your Nation belting up the London river. Racing to deliver the needed goods at the Normandy beaches. The first ships to arrive at Antwerp while flying bombs were still falling. And up the straight and over the line to Bremerhaven as the war finished.

That was a great and glorious fleet of Merchantmen in those days, and they were entitled to all the credit. No matter the time or the years to come, their credit will live, for nobody can rob them of their glory in helping to create a World peace, but can one say that such a Merchant fleet has been able to keep pace with peace time activities. We have seen year after year the steady decline in strength of the American Merchant Marine.

Many Nations today through an over generous policy from the American Government are now using the ships of glory to beat down American shipping with unfair and restricted practices.

May I quote some facts as they are today:

According to U.S. Senate Document 13—Subsidy aid for ships operating between the years 1934-1946, was the lowest single item in the entire Federal subsidy and price support program.

Domestic shipping, before the war an active industry, is today a tragic shadow of its former self. Then Coastal and Intercoastal passenger and cargo ships represented more than half of American Merchant Marine. All that is left are some freighters constituting less than 10% of the privately owned fleet.

Five ships a day were built at the peak of the wartime shipbuilding effort. During 1946-47, the average was only five ships a month and less than three per month in 1948.

Through a short sighted policy of economy the British Government, in the years before the war, allowed British shipyards to close while at the same time heavily subsidized Foreign yards were full up with British orders.

This must not happen to American shipyards. With such a Country of production, it is the interest of the American Government to see that its shipyards and Merchant Marine are in an undeniable position.

With America having the largest tourist trade in the World, it is ironical that its tourists have to rely so much on the passenger ships of other Nations. Have you so soon forgotten the difficulty that was experienced during the war years in getting American troops shipped to Europe? Lack of the right type of ships made it an extra burden on British passenger ships, as the figures of carriage quoted for the big "Queen" ships show.

The policy of the American Government should be an active support for the American Merchant Marine. It is no good to have freighters on reserve laying up in American backwaters to rust themselves to eventual uselessness. This is no assurance against the future, it is better to be forearmed against any eventualities.

A good fleet of Merchant ships, continually in use, and well looked after pays the best dividends to one's Country in peace and war.

Such ships should have the necessary patronage of the American Government on a liberal subsidizing policy."

Frank A. Davis /signed/

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Former MATSONIA Renamed ss ATLANTIC

Renamed the ss ATLANTIC, the former Matson Navigation Company's liner MATSONIA is reported scheduled to enter the Atlantic passenger service between New York and Mediterranean ports May 25 flying the pennant of the Panamanian Home Lines, running opposite the ss ITALIA, once the U. S. Army Transport JOHN ERICKSON and, earlier, the Swedish KUNGSHOLM. Cosmopolitan Shipping Company, New York, is agent for the Panamanian Home Lines. The vessels carry Italian crews.

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- **Shell Expansion Charts**

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Lykes Bros. Adds Three Vessels to Fleet

The addition of three vessels to Lykes Lines fleet of modern, fast, C-type cargo liners was announced recently by S. B. Turman, executive vice president of the Lykes Bros. Steamship Co., Inc.

Purchased from the U.S. Maritime Commission at a cost of approximately $1,000,000 each, two of the vessels, the ss CAPE ARCHWAY and the ss CAPE POSSESSION, are scheduled for service in the Caribbean, and the third, the ss CAPE GEORGIA, will enter the Mediterranean service.

All three are Maritime Commission designed C-1's. They are 417 feet in length and have a beam of 60 feet. The three vessels are 9,104 deadweight tons, with a displacement of 12,864 tons and a speed of 14½ knots.

The three vessels will be renamed. The CAPE ARCHWAY will become the BRINTON LYKES and its home port will be New Orleans; the CAPE POSSESSION will be the MARION LYKES registered at the Port of Houston, and the CAPE GEORGIA will be renamed the SHIRLEY LYKES, with Galveston as its registered home port.

With the addition of these new ships, Lykes Lines now operates a fleet of 51-C-type cargo liners on six trade routes between U.S. Gulf ports and the principal ports throughout the world. Each vessel will have modern and comfortable accommodations for a maximum of 12 passengers.

In addition to its company-owned fleet of 51 vessels, Lykes charters additional vessels from the Maritime Commission and is today one of the nation's principal operators of American flag tonnage.

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Clear Water for Your Cooling Systems

(Continued from Page 41)

systems De-Scalers can effectively be connected in series.

Engine Heat

The importance of clear water in the cooling systems of internal combustion engines is often overlooked and too frequently operators do not realize that the temperature gauge on the water line does not necessarily indicate the engine heat. Rust and scale, formed on the engine block and water jacket prevent the rapid transfer of engine heat to the cooling water. As a result, while the gauge may show a normal operating temperature, the engine overheats internally, oil breaks down prematurely, gum forms, rings and valves stick, hot spots develop, parts wear increases and the engine power is reduced.

As the temperature of the cooling water increases, the rate of scale forming and corrosion attack also increases. The action of the hotter water on the Butler De-Scaler automatically compensates for these destructive factors.

According to the experience of the Sperry Rail Service, radiator replacement and many other engine repairs has been greatly reduced since the Butler De-Scalers were installed, and the operating charts show that the cooling systems maintain a far more even temperature under varied conditions than they did formerly.

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Santa Ana Steamship Company has announced agreement has been made with Oliver J. Olson and Company for use of the ss GEORGE OLSON on the run between Seattle and Goodnews Bay and Bethel, Alaska. May and August sailings from Seattle are scheduled. The operation is linked with that of the Alaska Rivers Navigation Company, operators of river steamers navigating the Kuskokwim River.

U. S. Ranks Third In Number of Merchant Vessels

The United States ranked third in the number of merchant vessels (1,000 gross tons or over) and percentage of tonnage under construction or on order throughout the world the first of the year according to the Shipbuilders Council of America.

The first of 1948 the United States was eighth in the number of vessels and fourth in the percentage of tonnage.

Great Britain and Sweden retain first and second position with 47.2 per cent and 15.7 per cent respectively as compared with 53.3 per cent and 16.1 per cent the first of 1948.

During the last quarter of 1948 all maritime countries with the exception of Spain showed a drop in the tonnage under construction or on order. Spain showed an increase of six vessels amounting to 24,401 gross tons.

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NEW ORLEANS, LA.
J. J. Clarke Company, Phone: Raymond 2341
La-Mo Refractory Supply Co., Phone: Temple 4001

NEW YORK, N. Y.
Metropolitan Refractories Corp., Phone: Worth 4-3447

NORFOLK, VA.
A. Lynn Thomas Co., Inc., Phone: 5-8247

PHILADELPHIA, PA.
Eugene F. Zeiner, Phone: Walnut 2-4554

PORTLAND, ORE.
The E. J. Bartells Co., Phone: Webster 3291

SAN FRANCISCO, CALIF.
E. J. Bartells Co., Phone: Atwater 2-9166

SEATTLE, WASH.
The E. J. Bartells Co., Phone: Elliott 2748

CANADA

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Drexel Refractories Ltd., Phone: Hastings 5241-2

MONTREAL
A. P. Green Fire Brick Co., Ltd., Phone: Crescent 7235

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EQUIPMENTALK

Osborn and Pittman Receive Promotions with Hagan Corp.

W. J. (Bill) Osborn has been appointed district manager at San Francisco for Hagan Corporation, Pittsburgh, succeeding Clyde F. Williamson, resigned.

Mr. Osborn joined this combustion engineering and chemical engineering firm in September, 1940, and has been assigned to sales and service work on Hall boiler water treatment and Hagan combustion control in the marine and stationary fields in the San Francisco area since January, 1943.

Mr. Osborn received the B. S. degree in chemical engineering in 1935 at Carnegie Institute of Technology, in his native city, Pittsburgh, Pa. The following year he did graduate study at Carnegie Tech and received his M. S. degree in chemistry. He joined Babcock & Wilcox Company in 1936 as a service engineer, and joined Hagan Corporation in 1940.

Alfred Pittman, veteran marine engineer of thirty years' experience, has been appointed marine manager at the San Francisco Hagan office. He joined Hagan in 1942 after many years' engineering service for various steamship lines. including the old Pacific Mail Steamship Company.

Mr. Pittman, who was born in Antwerp, Belgium, of American parents, received his early schooling in New York City, and served his apprenticeship in marine engineering with the William J. Kennedy Company. He went to sea in 1918, sailing for the W. R. Grace Lines, the old Pacific Mail, and for ten years was chief engineer for Dollar Lines and its successor, American President Lines.

When he joined Hagan Corporation in San Francisco in 1942 Mr. Pittman was already familiar with the Hall system of boiler water conditioning, having started using it in 1937 while a sea-going marine engineer for Dollar Lines.

Mr. Williamson has joined the California Filter Co.

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Captain Macauley Becomes Manufacturer's Agent

Captain Edward Macauley, USN, retired, former United States Maritime Commissioner and Deputy War Shipping Administrator, has established the firm of Edward Macauley, Inc. at 25 California Street, San Francisco, to act as a manufacturer's and commission agent for domestic and foreign trade. Captain Macauley formerly was a member of the firm of Hibbs & Macauley, naval architects.

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Carrier Air Conditioning Aboard the ss CARONIA

Carrier Engineering Company, Ltd., London, an affiliate of the Carrier Corporation, Syracuse, N.Y., has installed twelve independent air conditioning plants aboard the ss CARONIA, the new 34,183-ton Cunard-White Star North Atlantic liner. This is the sixth vessel of that British line's fleet to be air-conditioned by Carrier. The CARONIA is the largest passenger ship built since the war.

The Dampney Company Issues New Informative Bulletin

Bulletin No. 1540 has just been issued by The Dampney Company of America giving pertinent information on that firm's Apexior No. 3 and its application to drinking and other water storage tanks, refrigerant condensors, various types of air conditioning equipment, submerged stern areas of ships and to many other types of equipment aboard ship. Copies may be had by writing the Dampney office at Hyde Park, Boston, Mass.

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Montgomery Transferred to Crane Packing LA Office

The Crane Packing Company of Chicago has recently announced the transfer of George Montgomery to its Los Angeles office. Mr. Montgomery will act in the capacity of sales engineer, handling all of the products in the "John Crane" line of packings, mechanical seals and lapping machines.

According to the company the transfer represents the Crane Packing Company policy of representation by highly trained service engineers. Starting with the company in 1934, Mr. Montgomery's first seven years were spent in the production of the various packing styles. In 1941, he was transferred to the engineering department, where he was active in development work on mechanical seals of all types. Since early in 1947, he has been with the sales department as a service engineer in the Chicago territory.

HAGAN CORPORATION appoints W. J. (BILL) OSBORN, left, District Manager at San Francisco and ALFRED PITTMAN, right, Marine Manager in the same territory.





GEORGE MONTGOMERY, recently transferred from Crane Packing Company's main office in Chicago to the company's Los Angeles office where he will act as Sales Engineer.



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REAR ADMIRAL THOMAS P. WYNKOOP, JR., USN (ret.), President of the Radiomarine Corporation of America.

Radiomarine Corp. Announce Personnel Changes

New president of the Radiomarine Corporation of America is Rear Admiral Thomas P. Wynkoop, who retired from the United States Navy March 1st, after 34 years of service.

Most of Admiral Wynkoop's years in the Navy were spent in the design and construction of warships. His assignments included eight years at Washington, D.C. and duty in some of the Navy's largest shipyards. His last office was that of commander of the Naval Shipyard at Long Beach, California, where he served from November, 1946 to January 1949.

Other personnel news in Radiomarine Corporation includes the appointment of Alex Vidas, formerly Miami district manager, to the new post of South Atlantic Regional Sales Manager; naming of Charles A. Lindh, formerly Pacific Coast regional manager to be district manager at Boston, Massachusetts; T. M. Gardner, former district manager at Portland, Oregon, to be service manager at Galveston, Texas; L. D. Conklin to be resident inspector at Portland, Oregon and Clyde Huffman, formerly with the Los Angeles office to be staff assistant to General Sales Manager George P. Aldrich, handling market research and sales analysis.

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Steelcote Issues Literature On New Paint Processes

According to the Steelcote Manufacturing Co., paint processes are now available that kill rot, rust and germs and replace them with non-porous, waterproof films that wash like glass and provide porcelain-like light reflection and beauty.

The company reports hundreds of combinations of chemical, atmosphere and temperature conditions can be specifically met by over forty chemicals and paints that have been specifically developed for the purpose.

Complete literature and details on the method of diagnosing surface maintenance problems and selecting the proper chemicals and coatings to solve them can be had on request from Steelcote's main office at St. Louis, Missouri.

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Quick Factory Service Feature Of Great Western Cordage

Quick factory service to Pacific Coast marine users has been one of the mainstays of the business of Great Western Cordage, located at Orange, California, and one of only three rope mills west of the Mississippi River.

Although during the war practically the entire production of this modern, daylight mill went to government agencies, the same dependable service and the same Great Western rope is available again through major West Coast ship supply houses aided by these factory representatives: C. H. (Charley) Allen in Los Angeles, R. A. (Dick) Russell in San Francisco, R. C. (Jack) Frost in Portland and W. E. (Bill) Kichline in Seattle.

Leading Marine Supply dealers handling the "Great W" brand line are: San Pedro—Seaside Supply Stores and California Ship Supply Co.; Wilmington—Republic Supply Company; San Francisco—Harbor Supply Company; Oakland—Republic Supply Company; Portland—Harbor Supply Company and Gilmore Steel & Supply Company; Seattle—American Ship Supply Co., Marine & Industrial Supply Co.

Supertanker Powered by GE Exceeds Designed Speed

General Electric marine propulsion turbines and gears powered the new supertanker ESSO ZURICH on her trial run as she exceeded her designed speed by one knot. The vessel, first of a fleet of 14 modern high-speed tankers for Standard Oil Co. (New Jersey), made her maiden voyage recently in ballast from Chester, Pa. to Corpus Christi, Texas and returned from there with crude oil to Bayway, N.J.

The ship, first 26,555 DWT supertanker to be delivered to its owners, was built at Sun Shipbuilding Co. in Chester, Pa.

Designed to cruise at 16 knots, the ESSO ZURICH made in excess of 17 knots over a measured course in Refuge Bay near the entrance to the Delaware River. To simulate loaded draft conditions, sea water equivalent to the weight of 9,500,000 gallons of gas was pumped into her tanks.

Propulsion equipment on the ESSO ZURICH consists of one high-pressure and one low-pressure turbine, combined to form one cross-compound unit generating 12,500-shp under normal conditions. Maximum shaft horsepower is 13,750. Steam conditions are 835 psig and 840F at the turbine inlet.

Auxiliary light and power are supplied by two G-E 400-kw turbine-generator sets, designed particularly for use on this class of ship. The six-stage turbines operate off the main boilers, under the same steam conditions as the main propulsion turbines.

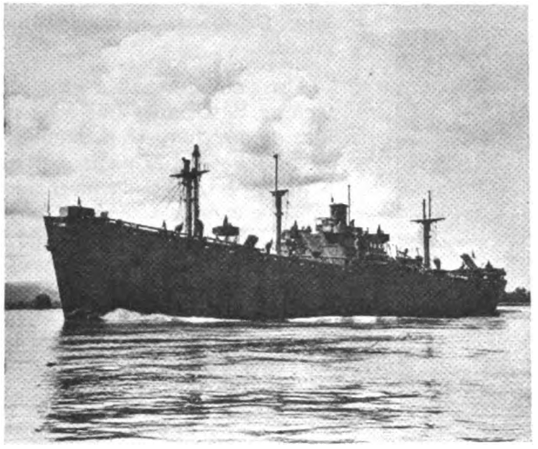
The a-c generators are six-pole, three-phase, 60-cycle, 450-volt units that operate at 1200 rpm. They are capable of carrying a 25 per cent overload for a two-hour period when operating at rated steam conditions.

The next tanker in this class to go into service will be the ESSO SUEZ, also owned by Standard Oil Co. (New Jersey). This vessel was launched Jan. 14 at the yard of the Newport News Shipbuilding and Dry Dock Co. Main and auxiliary power units for the ESSO SUEZ have also been supplied by General Electric.

GREAT WESTERN CORDAGE factory representatives: left to right, C. H. (Charley) ALLEN, Los Angeles; R. A. (Dick) RUSSELL, San Francisco; R. C. (Jack) FROST, Portland, and W. E. (Bill) KICHLINE, Seattle.



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Genuine Repair Parts for

DECK MACHINERY

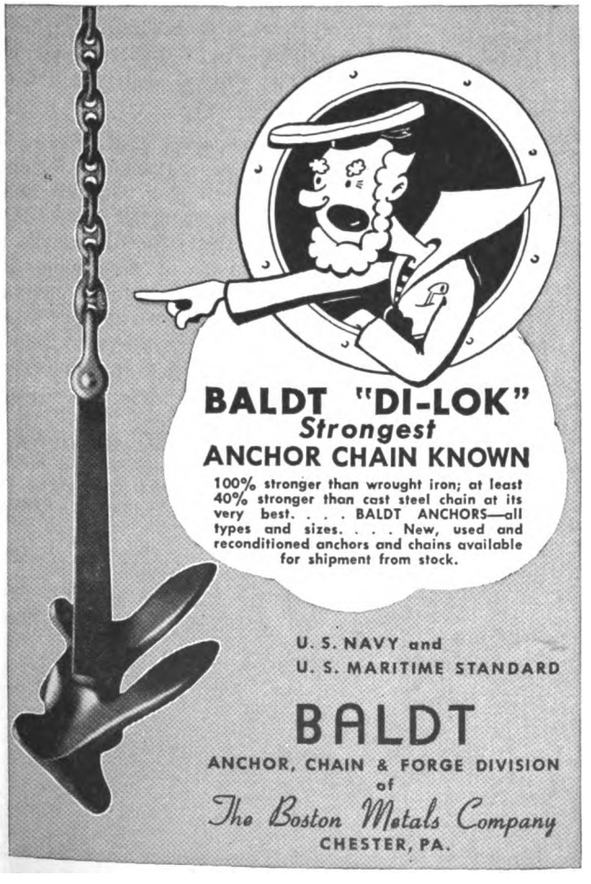
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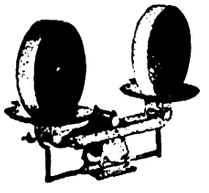
Sea-Ro No. 535 Pump Valves are custom made from a dense, fine grained phenolic base composition. This valve stock is treated with a binder, preservative, and impregnated with graphite, then laminated under pressure of 2000 lbs. per square inch. They are an all-purpose valve, eliminating the necessity for maintenance of various types of valves to insure economical operation. Sea-Ro No. 535 Valves are impervious to decomposition, warping and chemical action and can be resurfaced after years of service for extra duty under the toughest conditions.

Make these 3 Tests to be convinced



FOR SWELLING

Take one of your present pump valves and a Sea-Ro No. 535 of the same size. Boil them together in water for 24 hours. Then let the micrometer tell you its amazing story of Sea-Ro's resistance to swelling.



FOR ABSORPTION

Weigh both valves before boiling and then after. Let the scales reveal, as no words can, how Sea-Ro's laminated phenolic base resists absorption.



FOR SURFACING

Spot both valves on a face plate. You will immediately notice the velvet-smooth surface of No. 535 machine-ground into the dense, fine-grained Sea-Ro Valve.

FREE SAMPLE: We invite you to make these revealing tests on your pump installations. Send for a sample Sea-Ro No. 535 Valve without cost or obligation.

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STANLEY M. HUNTER, recently elected Executive vice president of American Hoist & Derrick Company.



GEORGE E. CROMWELL, newly-appointed Sales Manager for Marine and Industrial Supplies and Service, Inc., Portland, Oregon.

American Hoist Elects Hunter to New Position

H. O. Washburn, president of American Hoist & Derrick Company, St. Paul, Minnesota, has announced the election of Stanley M. Hunter to fill the newly-created position of executive vice president. According to the company, expanding business has made it necessary to create the new managerial post.

After graduating from Albion College, Albion, Michigan, with a B.A. Degree, Mr. Hunter began his career as an apprentice at Novo Engine Company in 1919 and served as sales manager from 1925 to 1936.

Mr. Hunter joined the sales department of American Hoist in 1936 and has served as vice president of Sales, and a member of the Board of Directors, since 1945. He also holds Board positions with other organizations.

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Marlo Packing Headquarters In Oakland

Universal Specialties Co., Inc., distributors for Marlo Packing have moved their Northern California office to the Pacific Building, 600 16th Street, Oakland, phone TEmplebar 6-3555. Associated with the company are: Don Hale, manager of the office; Don B. Woodcock, field sales engineer; Eric Stenstrom, marine sales representative and, Bernard Reisman, Wilmington, Pacific Coast representative of Marlo. Mr. Hale was transferred from the firm's head office in Wilmington, Mr. Woodcock is a graduate sales engineer; Mr. Stenstrom was assistant superintendent of Naval construction at the Moore shipyard in Oakland, and Mr. Reisman is the head of Universal Specialties.

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Raybestos-Manhattan Line to Fred Miller at Portland

Fred Miller, president, Marine and Industrial Supplies and Service, Inc., Portland, Oregon, has announced appointment of his company as exclusive distributor in Oregon for the Raybestos-Manhattan, Inc., Passiac, New Jersey, line of belting, hose, V belts, and mechanical rubber goods.

Also announced is the affiliation of George E. Cromwell as sales manager for Marine and Industrial Supplies and Service. Backed by 27 years experience in the belting, hose, and mechanical rubber goods business, Cromwell is well-known in the Pacific Northwest and has grown up with the development of fractional horsepower drives to become a recognized authority on V belts and mechanical rubber goods products, according to the company.

In addition to the Raybestos-Manhattan line, Marine and Industrial Supplies and Service, Inc. are also distributors for John Crane packings and mechanical seals, Marshalltowne gauges and thermometers, Doyle vacuum cleaners, and Midwest-Fulton steam traps and gauges.

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L. L. White Joins Coastwide Painters as General Manager

L. L. White, former secretary of the Northern California Section of The Society of Naval Architects and Marine Engineers and for years chief surveyor for Matson Navigation Co. has become general manager of Coastwide Painters, 500 Jefferson St., San Francisco, marine, industrial and residential painting contractors. Mr. White recently was chief surveyor with M. J. Ryan, San Francisco naval architect.

Also associated with Coastwide are: Ben Price, superintendent, formerly paint superintendent for United Engineering and the marine department of R. P. Paoli & Co.; B. (Matt) Mathisen, who has been office manager of Coastwide since the firm was established seven years ago; and Dan P. Maher, Jr. Mr. Maher was a Naval lieutenant during the war, serving as a second officer on a minesweeper in the South Pacific.

MARLO PACKING HEADQUARTERS IN OAKLAND . . . Left to right: DON HALE, Manager of the office; DON B. WOODCOCK, Field Sales Manager; ERIC STENSTROM, Marine Sales Representative; and seated, BERNARD REISMAN, Wilmington, Pacific Coast Representative of Marlo.



"ANY AMOUNT AROUND THE CLOCK" is the slogan of these new operators of Fairn & Swanson, San Francisco slop chest operators at 137 Steuart Street, telephone SUtter 1-3194.

Left to right: KEN HUNTINGTON, formerly with Hammond Shipping Co. and Republic Supply Co.; PAUL BABCOCK, purchasing agent of Pacific Transport Lines and BILL FERRARI, formerly with the American Mail Line. Fairn & Swanson have been in business for a number of years and now carry cigarettes, cigars, liquor, linen, toiletries, candy and clothing. They'll deliver anywhere, anytime!

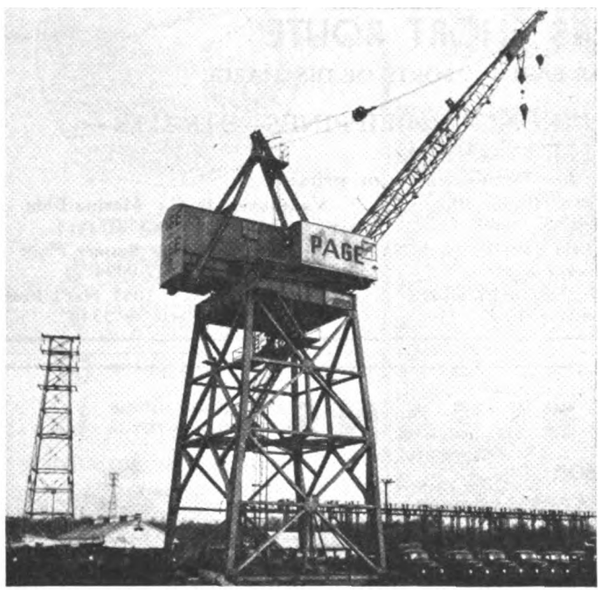


LES WHITE JOINS COASTWIDE PAINTERS . . . Left to right: DAN P. MAHER, JR., associated with the firm; L. L. WHITE, General Manager; BEN PRICE, Superintendent; and B. (MATT) MATHISEN, Office Manager.



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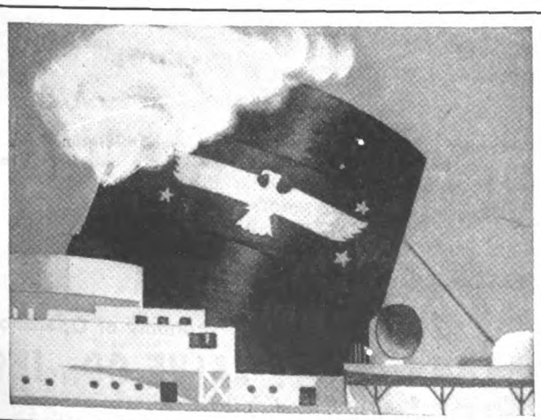
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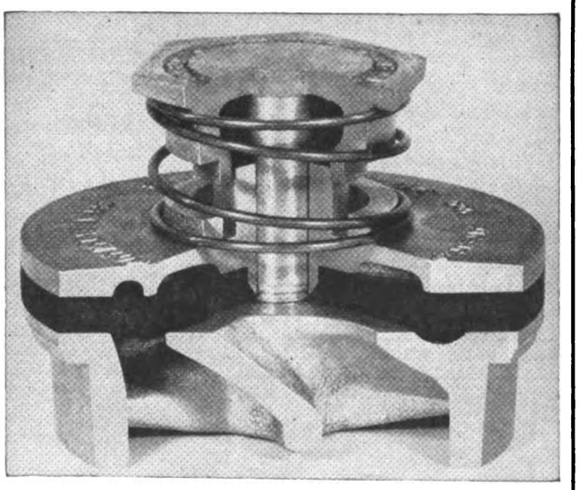
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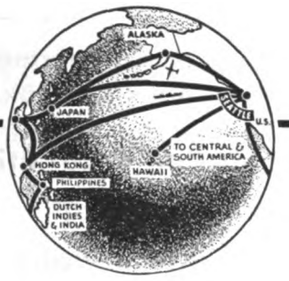
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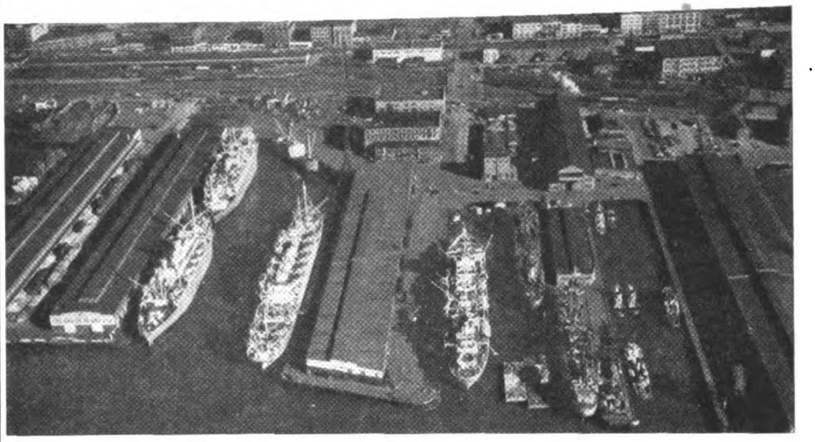
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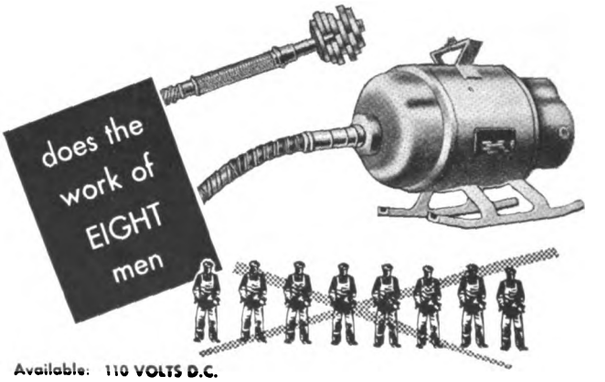
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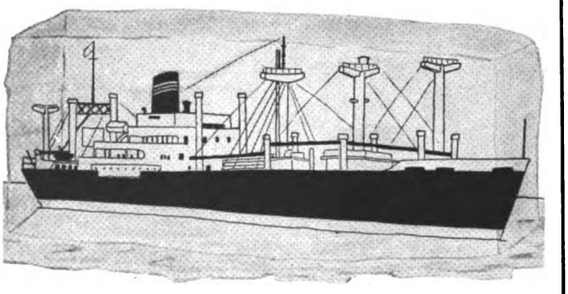
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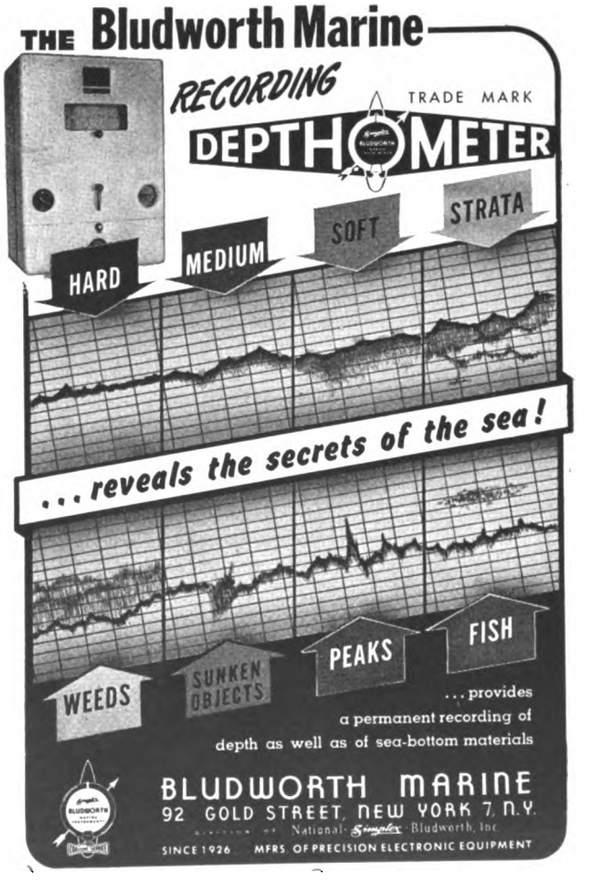
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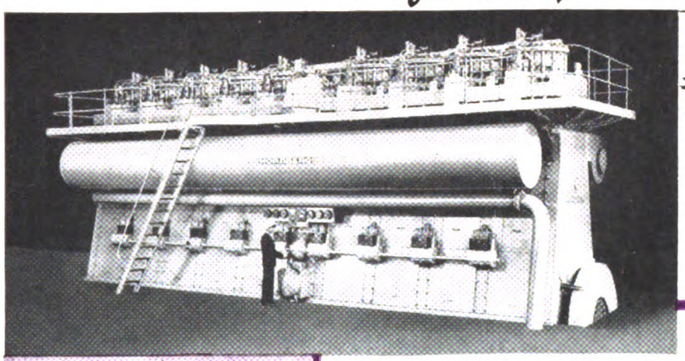
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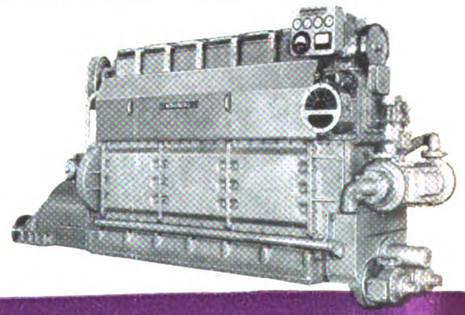
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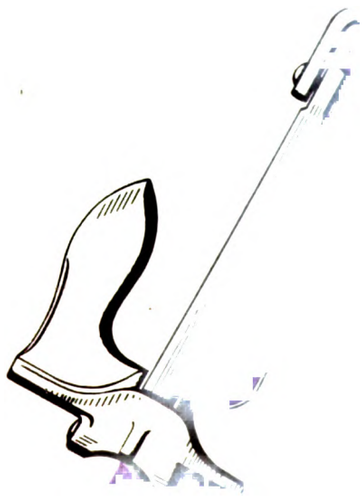
TWO-CYCLE

See Page 3

FOUR-CYCLE



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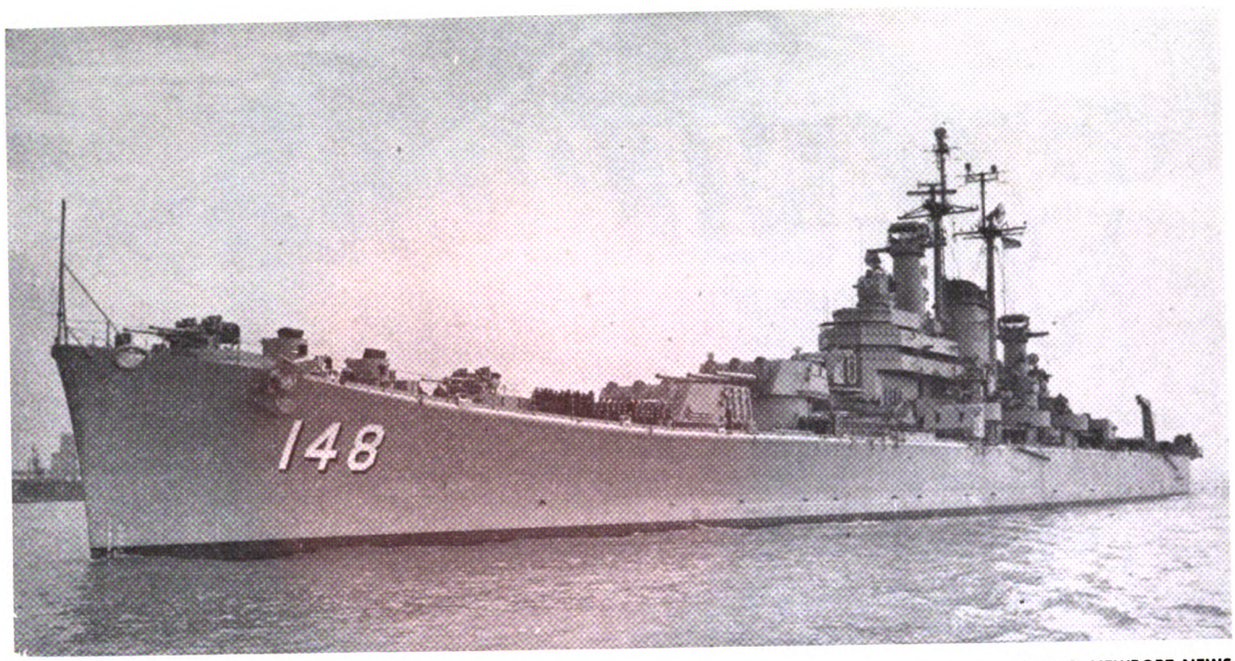
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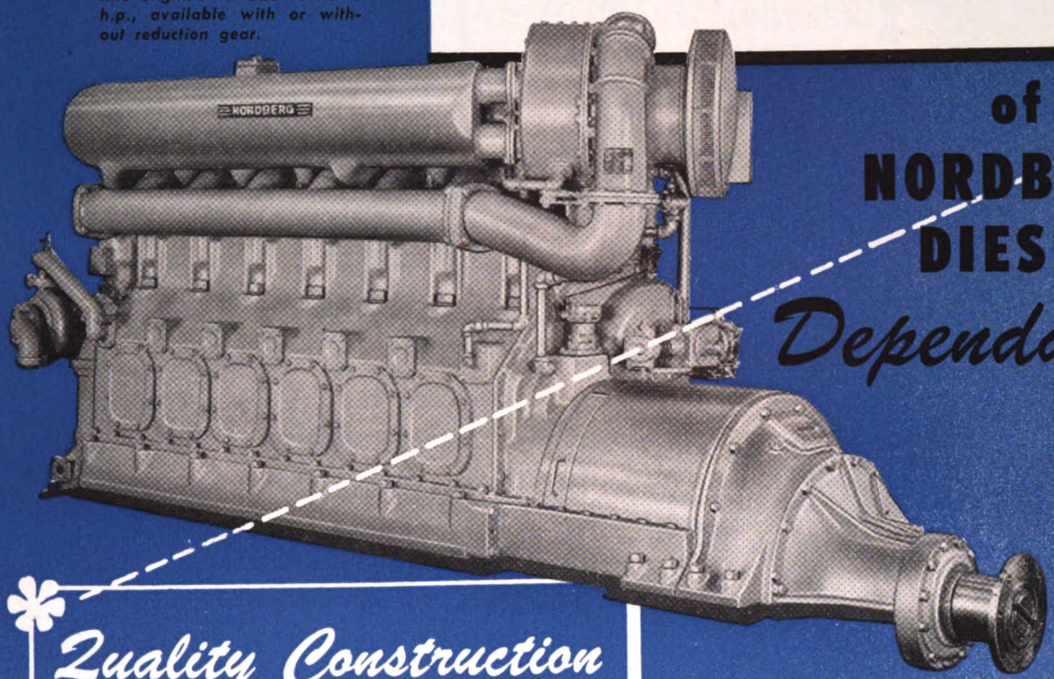
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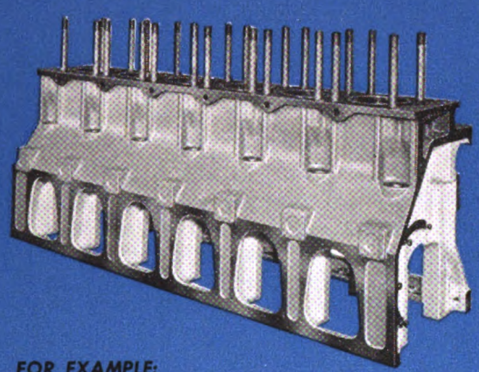
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Type FSM-9 and 13 Supercharged and Non-Supercharged Four-Cycle Nordberg Diesel Marine Engines — 220 to 1370 h.p., available with or without reduction gear.



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FOR EXAMPLE:

"Backbone" of any engine is its frame, upon which dependable performance must be based. In Nordberg four-cycle Diesel Engines of the type illustrated, this frame is a one-piece, ribbed and reinforced alloy iron casting, forming the upper crankcase and enbloc cylinder. Tie rods between the frame and the bed relieve all tension stresses, resulting in maximum strength and rigidity.

DEPENDABLE, trouble-free, Diesel operation doesn't just "happen" . . . it has to be designed and built right into the engine itself. By taking a look "inside" a Nordberg Diesel Marine Engine, you will find the highest quality construction throughout — every detail has been designed and built to give years of dependable, low-cost operation. And, world-famous Nordberg quality is no idle claim . . . the outstanding performance of Nordberg Diesels has been proved in all classes of marine service, from small fishing craft up through large sea-going vessels.

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When these eighteen ships go into service, they will join the ranks of more than 10,000 others relying on Carrier Air Conditioning and Refrigeration.

More than 10,000 – that's quite a number. It includes all types and tonnages operating all over the world. It provides as practical a proving ground as any equipment could possibly have, and records show that Carrier performance is outstanding.

That's one good reason for specifying Carrier for new construction or reconversion. You know beforehand it will deliver the efficient, economical performance you need.

Not only that, Carrier's Marine Department is staffed by engineers who have the know-how to design and install the best set-up for your requirements. And after a ship goes into operation, you have available Carrier's complete maintenance service, which covers every deep-water port in the U. S. as well as strategic points on the world's major trade routes.

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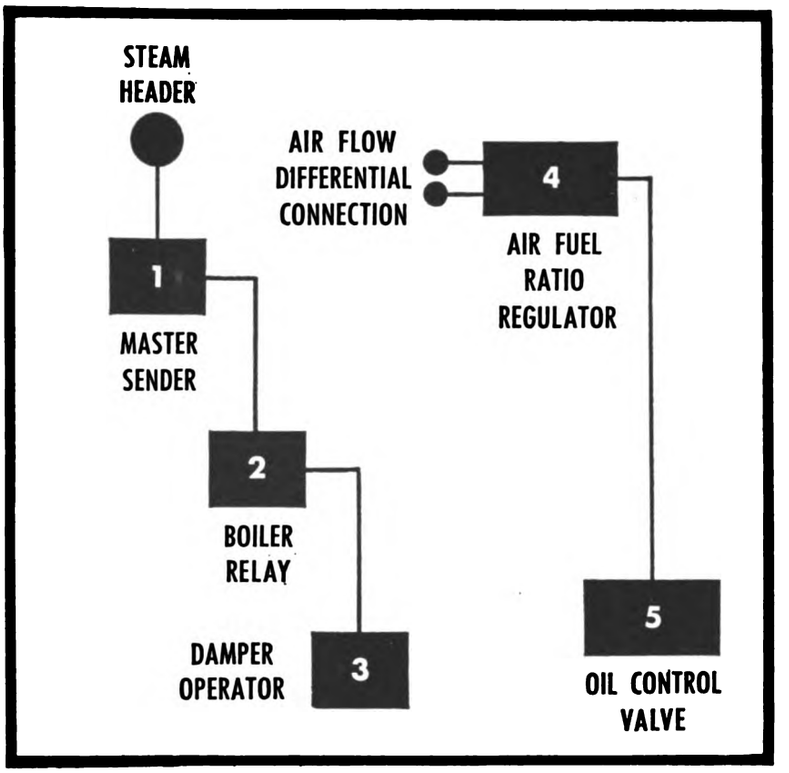
IS THE KEYNOTE

OF HAGAN

AUTOMATIC

COMBUSTION

CONTROL



This diagram shows the Hagan Automatic Combustion Control system in its simplest form, such as is used, for example, on Liberty Ships. Here is how it works.

1. The *Master Sender*, connected to the steam header, converts slight variations in steam pressure into a pneumatic control signal pressure.

2. The *Boiler Relay* receives the master control signal and relays it to the damper operator. It also gives operating flexibility by providing means for (a) remote manual control of forced draft from panel and (b) readjustment of the division of load between boilers when on automatic operation.

3. The *Damper Operator* converts control air pressure into damper movement, increasing or decreasing air flow as required.

4. The *Air-Fuel Ratio Regulator* measures the actual air flow, and sends a pneumatic signal to the oil control valve. Incorporated in this regulator is a means for adjustment of air-fuel ratio to the desired value.

5. The *Oil Control Valve* automatically adjusts oil flow in accordance with the air flow available.

This system provides

- **A. Automatic control of steam pressure**
- **B. Automatic maintenance of the proper air-fuel ratio for smokeless, economical operation**
- **C. Division of steam load between boilers**
- **D. Safety protection**

For more detailed information on Hagan Automatic Combustion Control systems and their components, just fill in the coupon below. Hagan Corporation, Hagan Building, Pittsburgh 30, Pa.

HAGAN

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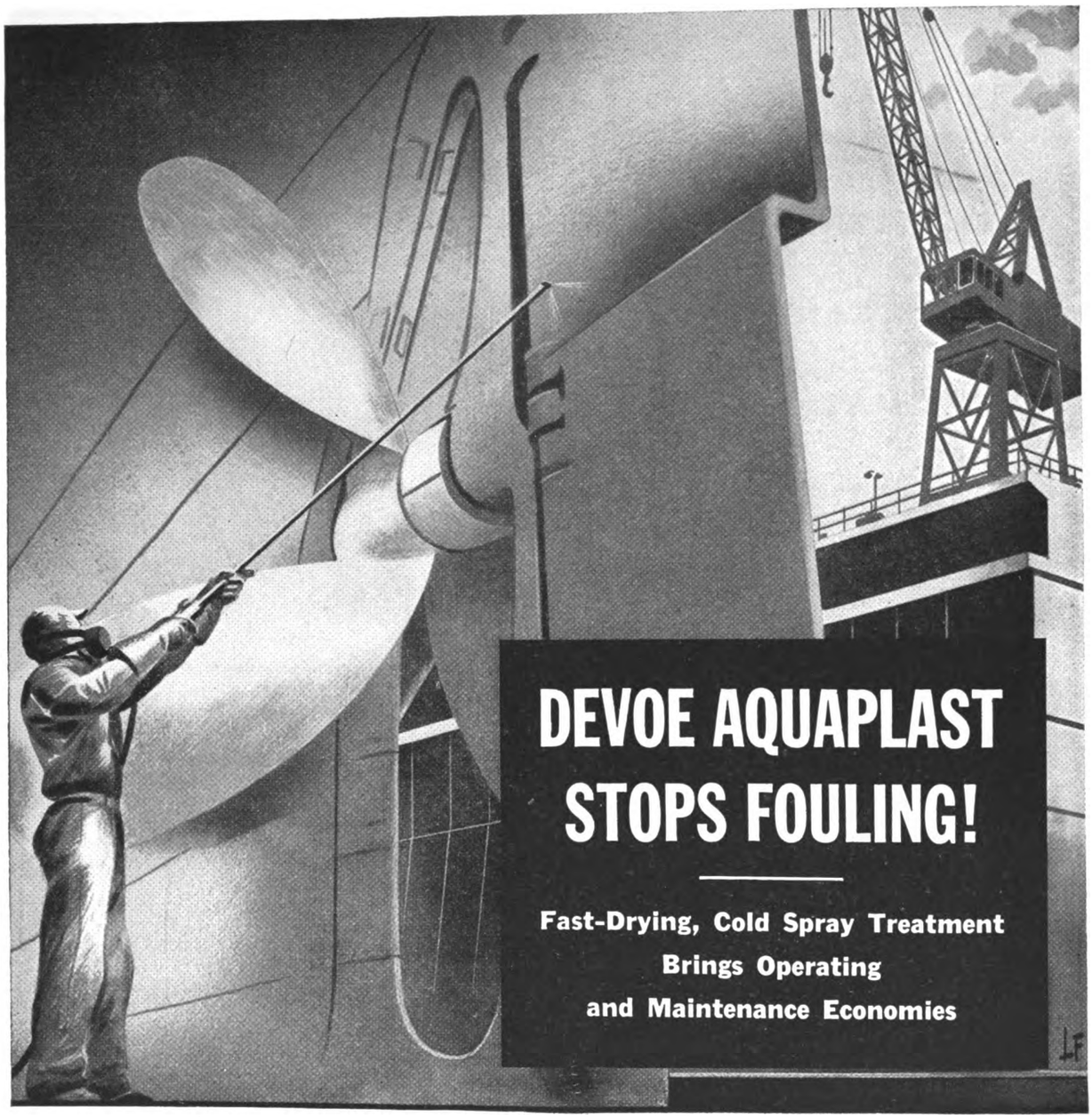
Please send me a copy of the article "Marine Combustion Control Operation, Maintenance and Design."

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Actual performance records during and since the war indicate that the effectiveness of this improved bottom treatment extends between one and two years!

The anti-corrosive coat MD-2079 can be applied over existing commercial bottom paints provided loose paint and scale have been removed by wire brushing. The anti-fouling coat MD-2080 dries to a smooth, sleek finish which resists physical damage. Both coats may be applied by either brush or spray.

For complete technical information about Devoe Aquaplast, write for Bulletin No. 42, to Marine Division, Devoe & Raynolds Company, Inc.,

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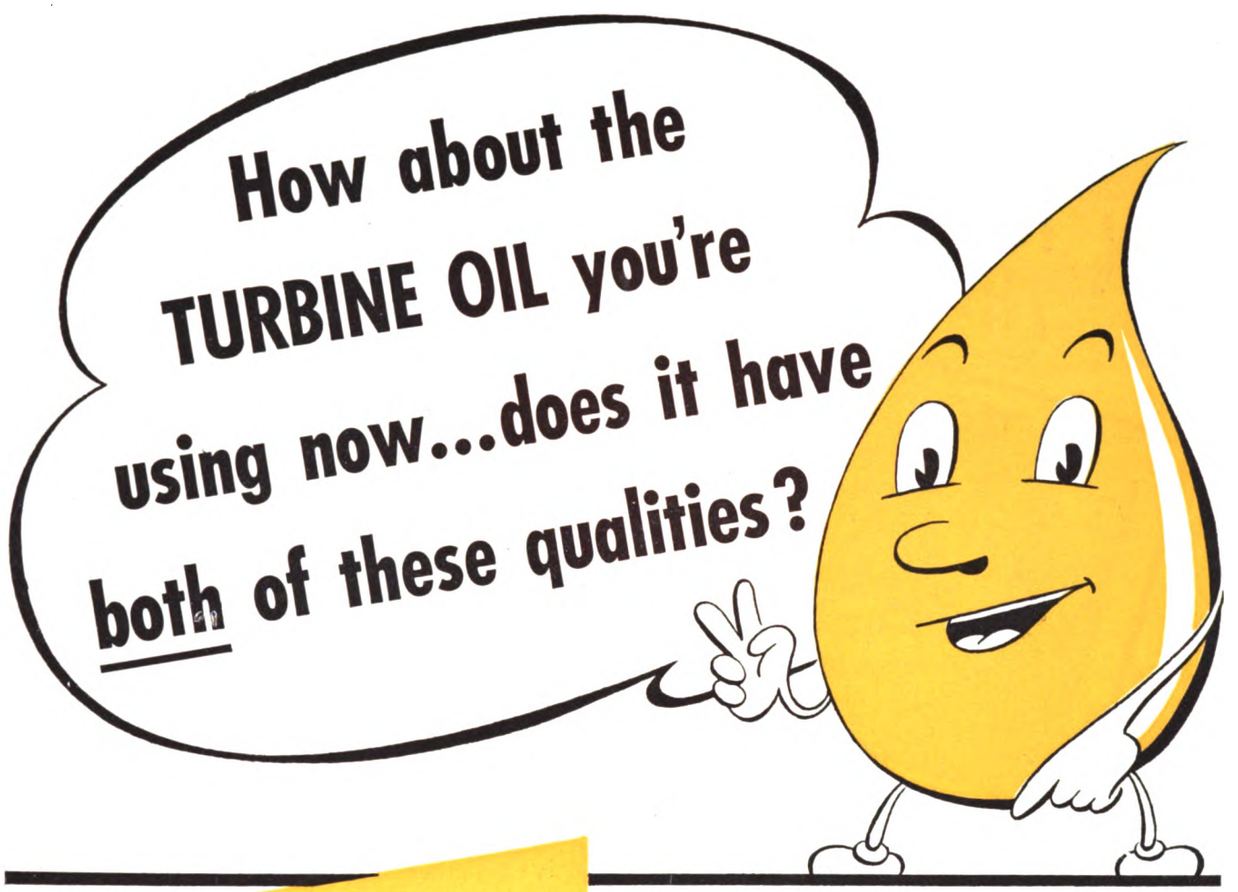
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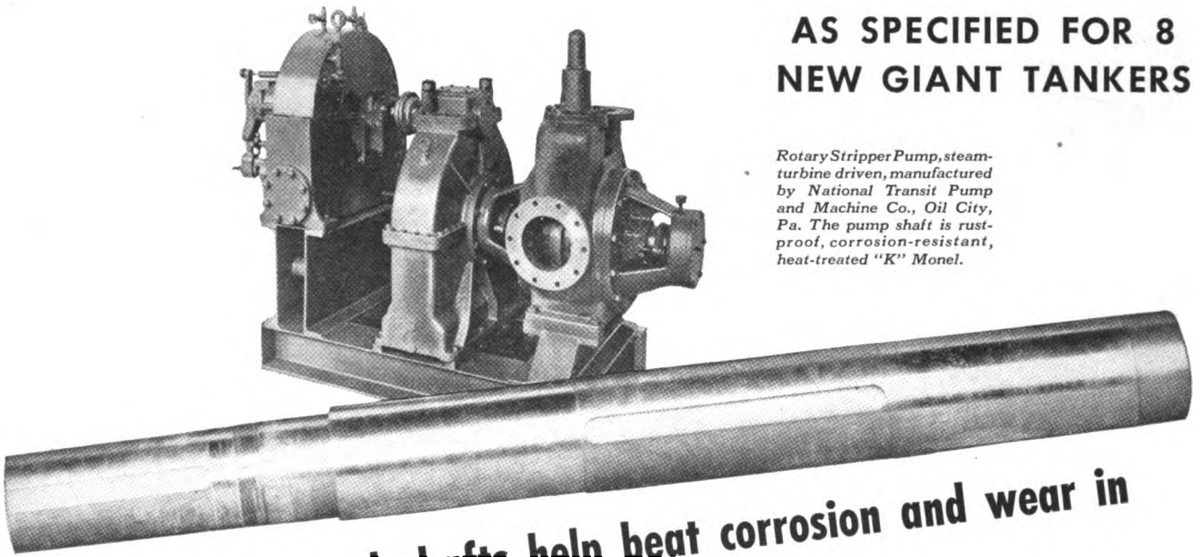
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AS SPECIFIED FOR 8 NEW GIANT TANKERS

Rotary Stripper Pump, steam-turbine driven, manufactured by National Transit Pump and Machine Co., Oil City, Pa. The pump shaft is rust-proof, corrosion-resistant, heat-treated "K" Monel.

How "K" Monel shafts help beat corrosion and wear in NATIONAL TRANSIT CARGO PUMPS

Prior to World War II, the National Transit Pump and Machine Company undertook the difficult task of designing a special rotary pump for handling both fuel oil cargoes and salt water ballast.

Corrosion was one problem. Fatigue was another. These two commonly cause a substantial percentage of pump failures. Knowing the reputation of high-nickel alloys for high strength and resistance to corrosion, National Transit designers came to International Nickel for recommendations.

With the assistance of INCO, they chose "K"* Monel as the metal for the all-important pump shaft. In "K" Monel (a heat-treatable type of Monel) they found an alloy that is rustproof, highly resistant to the corrosive action of sea water and fuel oils, with a strength and hardness equal to many heat-treated alloy steels. **Heat-treated** "K" Monel gave the following average characteristics: tensile strength, 155,000 psi; hardness, 290 Brinell; torsional modulus of elasticity, 9.5 million psi.

Nickel-bearing alloys were specified for other parts of these important cargo pumps, too: Ni-Resist* (austenitic cast iron) for the pump body; Nickel bronze for liners, rotor plates and end plates; Nickel alloy steel for the reduction gears.

In service, these "K" Monel-shafted pumps gave such outstanding trouble-free performance that several large oil companies ordered them for their tankers. During World War II, the U. S. Navy specified "K" Monel as the standard shaft metal for all cargo pumps... and has continued this specification up to the present.

This story—typical of thousands in our files—may suggest a solution to some metal-selection problem of your own. If so, don't hesitate to consult INCO's Technical Service Department. You can find valuable assistance in this reservoir of metal engineering information.

8 GIANT NEW 28,000 TON TANKERS WILL CARRY NATIONAL TRANSIT CARGO PUMPS

Eight giant new tankers, now building at Sun Shipbuilding and Drydock Co., Marcus Hook, Pa., will be equipped with National Transit Rotary Pumps for cargo stripper, transfer, and engine room fuel oil service.

The "550 Model B" pumps have a capacity of 500 gpm at a discharge pressure of 125 psi. The Ni-Resist pump casing will withstand a working pressure of 250 psi. The pumps are driven by 75 hp, 1750 rpm, DC motors, through built-in reduction gears.

***For further information about National Transit Pumps, write to* NATIONAL TRANSIT PUMP & MACHINE CO., OIL CITY, PA.**



Monel* **THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall St., New York 5, N. Y.**

"... It's the SEAGOIN' metal"*

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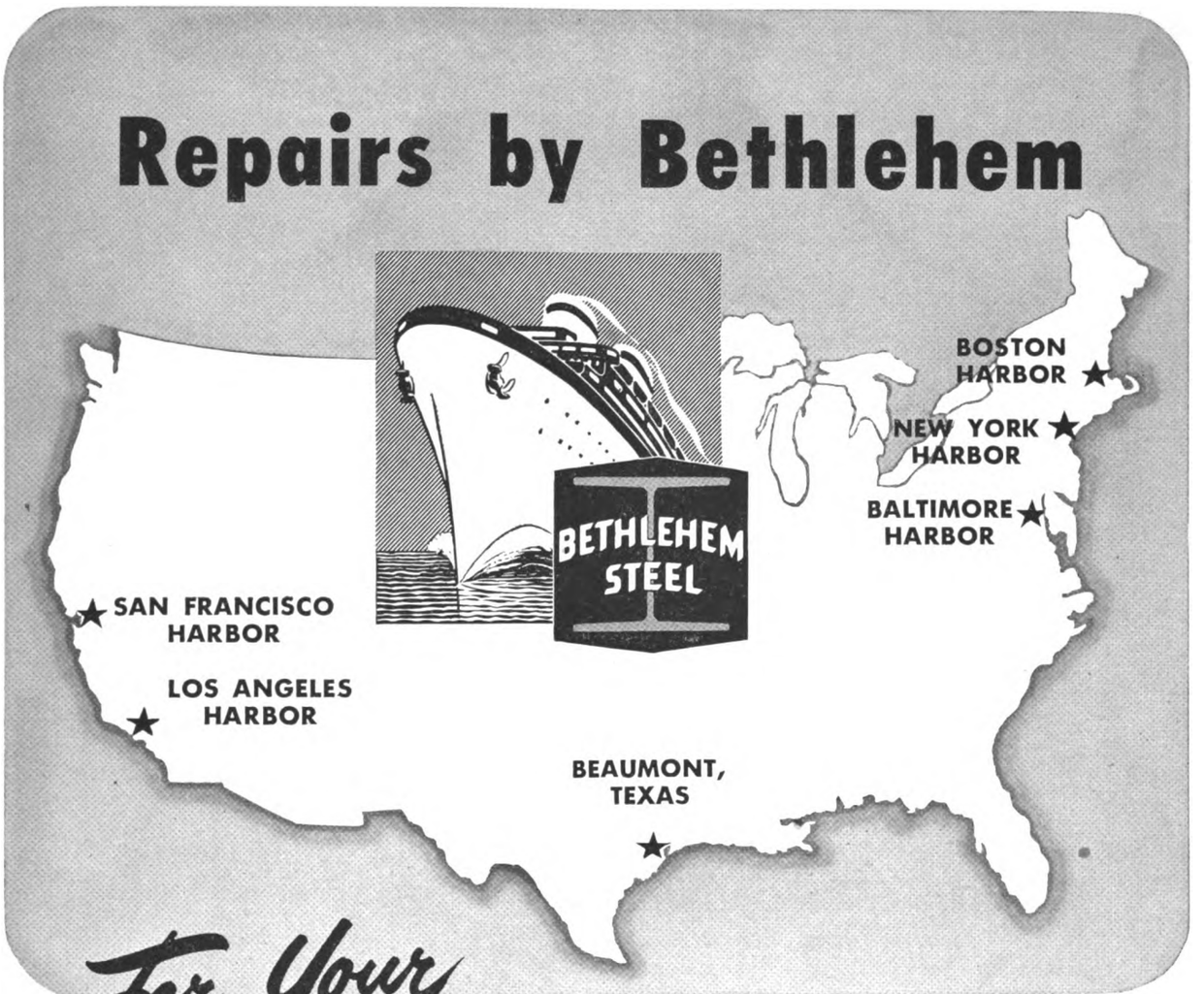
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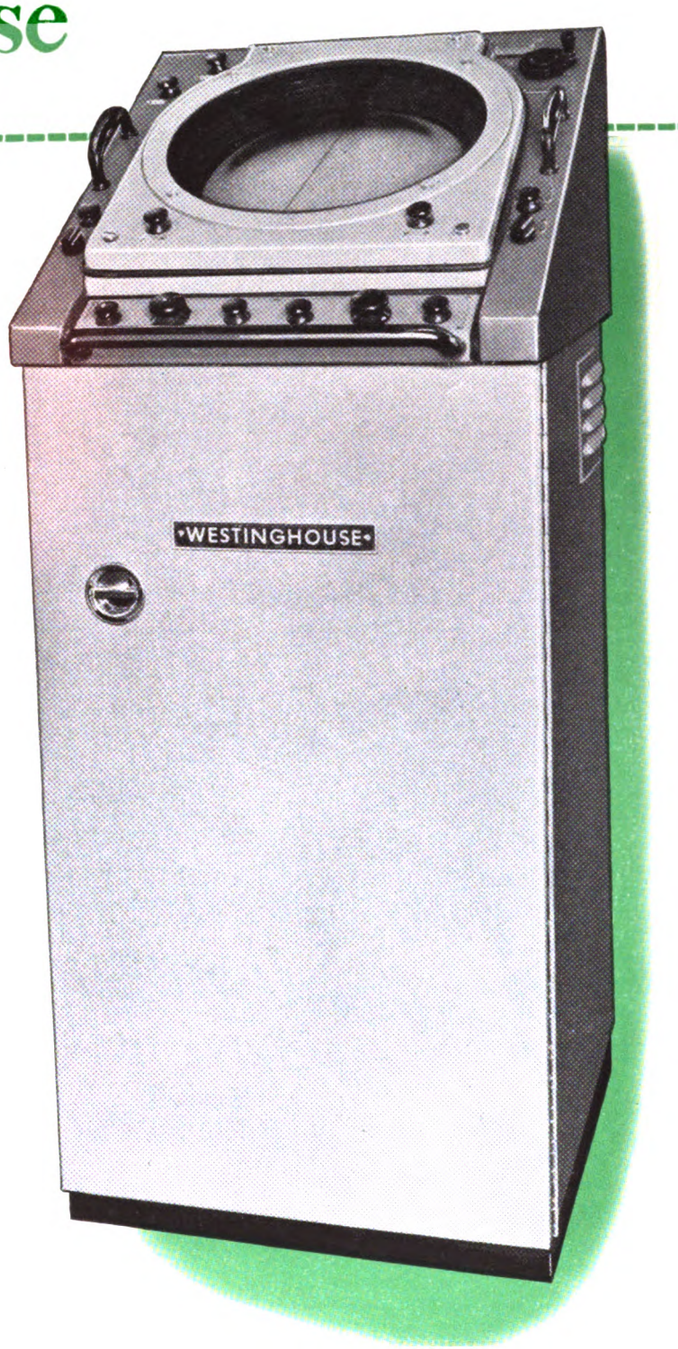
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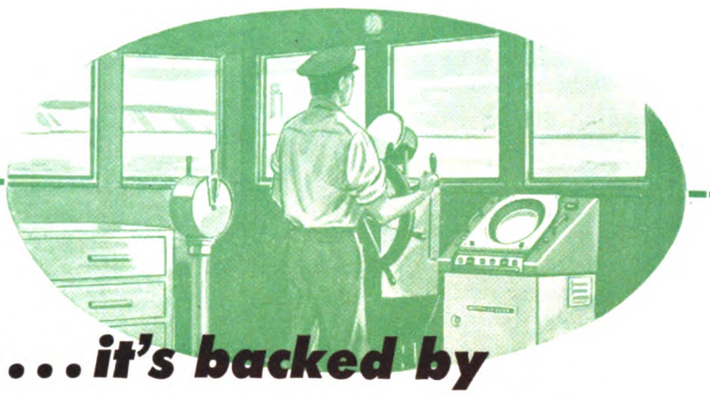
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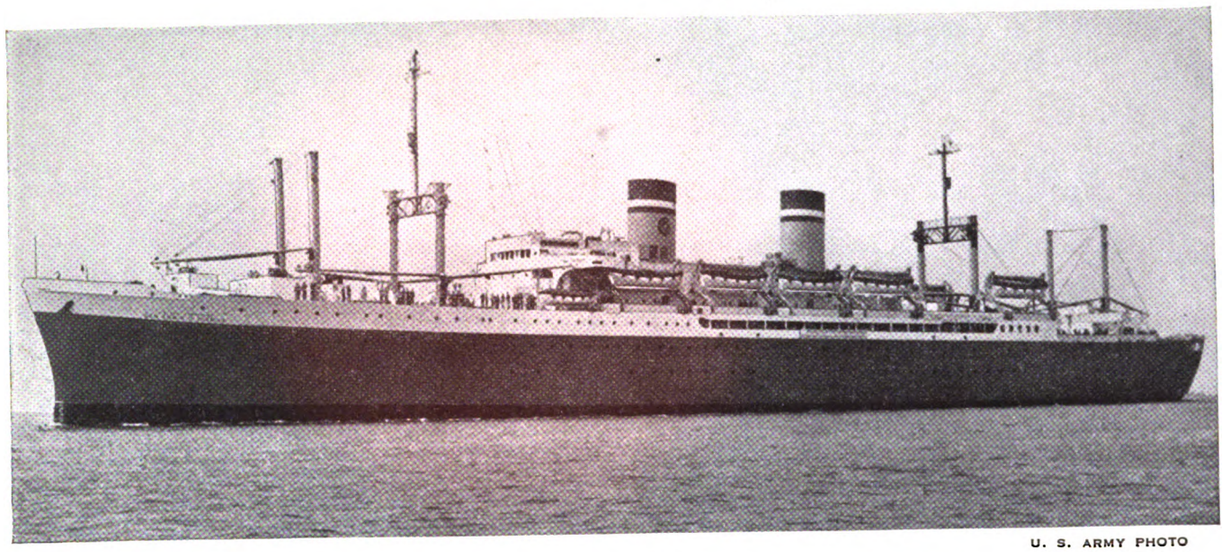
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MARINE SERVICE

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THE U. S. ARMY TRANSPORTATION CORPS CHOSE WELIN EQUIPMENT – *because of its Dependability*



U. S. ARMY PHOTO

In 1948 WELIN LIFESAVING EQUIPMENT was used when 29 C4 and P2 Army transports as well as troopships were converted into modern globe circling freighters and passenger ships.

Naval architects of the Army Transportation Corps designed this equipment so that each ship was equipped with ten sets of Welin gravity davits. Each set of davits handles a 35 foot hand propelled boat that accommodates 135 persons. Another 30′ 8″ lifeboat that accommodates 77 persons is nested inside these 35 ft. boats. This assures a maximum of safety with a minimum of cost.

Two Welin crescent type davits handling two 26′ x 9′ aluminum motor propelled rescue boats, equipped with radio, are also standard equipment on each vessel.

Welin's matched lifesaving equipment is dependable—efficient and light weight. It requires a minimum of maintenance. Its efficient design permits 40 second launchings under the most severe conditions.

If you are planning new construction or to convert ships or replace old type lifesaving equipment, let a Welin engineer think along with you. From the winch brake lever to the keel of every lifeboat, Welin equipment is a masterpiece in engineering and construction.

When specifying lifeboat equipment it will save you money to specify the equipment with the longest life and the lowest maintenance cost—Welin.

In 1948 Welin furnished lifesaving equipment for conversion of 29 C4 and P2 Army transports and troopships.

Each ship NOW equipped with *8 sets of Welin gravity davits handling eight 35 foot, 135 person hand propelled boats nested* with eight 30 foot 8 inch 77 person hand propelled boats.

Two sets of Welin gravity davits handling two 35 foot 135 person hand propelled boats and two sets of Welin Crescent type davits handling two 26 ft. x 9 ft. x 3 ft. 10 in. 43 person aluminum motor propelled radar equipped rescue boats.

This furnishes accommodations for a total of 2052 persons.

TRAVEL AND SHIP BY AMERICAN VESSELS

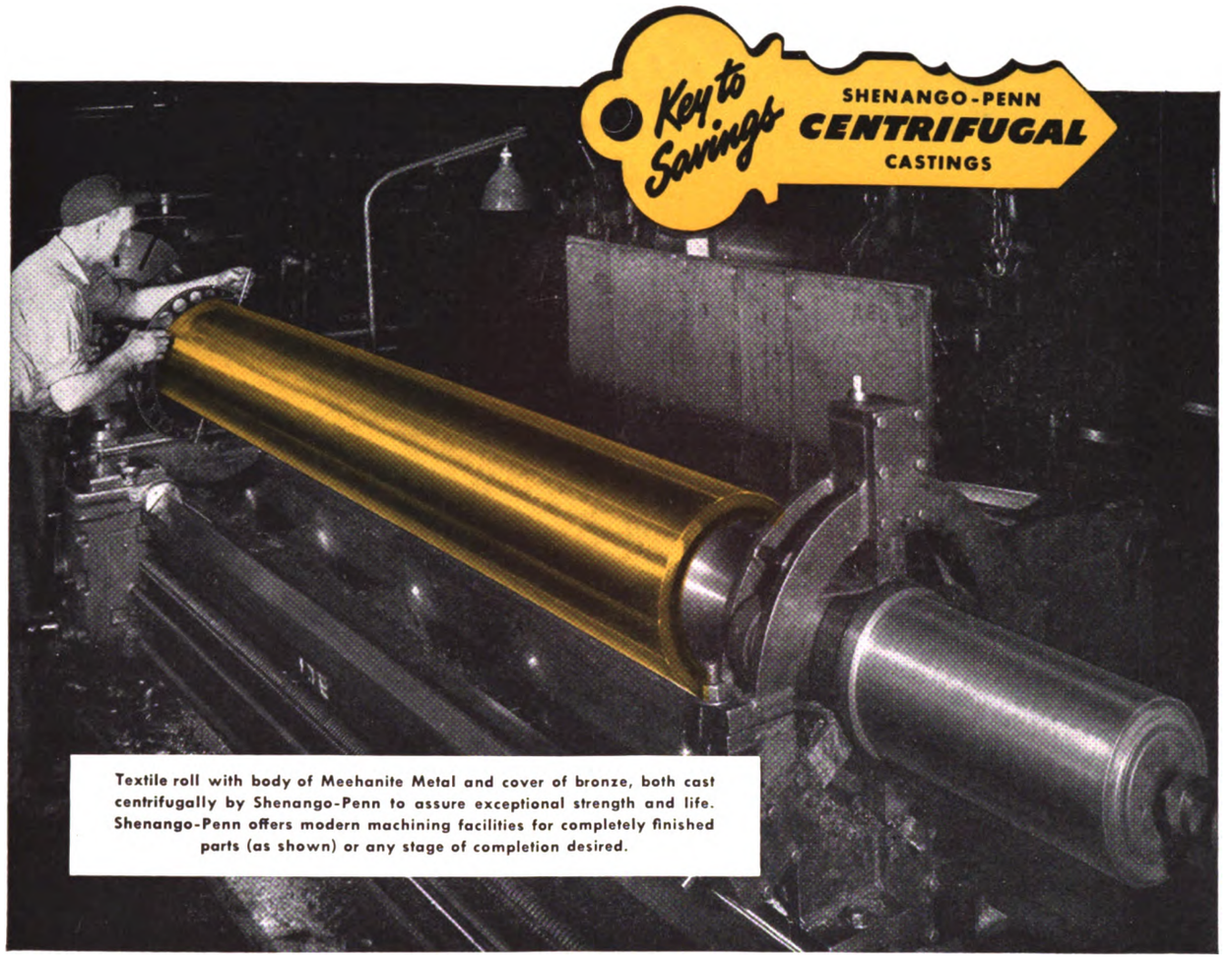
Welin

WELIN DAVIT AND BOAT

DAVIT AND BOAT DIVISION OF CONTINENTAL COPPER AND STEEL INDUSTRIES, INC.

PERTH AMBOY • NEW JERSEY
SAN FRANCISCO • CALIFORNIA

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Textile roll with body of Meehanite Metal and cover of bronze, both cast centrifugally by Shenango-Penn to assure exceptional strength and life. Shenango-Penn offers modern machining facilities for completely finished parts (as shown) or any stage of completion desired.

How this textile roll might smooth out a problem for YOU

IF SYMMETRICAL parts (such as sleeves, liners, rings, bushings, rolls and roll covers) figure in the machinery you build or operate, the above roll has qualities that could probably save you time and money.

The roll's body is Meehanite Metal—a big advantage in itself. The cover is bronze. Both are Shenango-Penn *centrifugal* castings. This means fine-grain, *pressure-dense* metal, assuring exceptional strength and hardness, and permitting the finest kind of finish. You just can't beat this combination for resistance to wear, breakage and distortion . . . for *long life!*

That's why Shenango-Penn is continually producing symmetrical, annular and tubular parts, large and small, for many services in many industries. Send for free bulletins on either ferrous or non-ferrous made-to-order centrifugal castings or on *centrifugally cast* bronze bushing stock in standard sizes.

SHENANGO-PENN

SHENANGO-PENN MOLD COMPANY
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Executive Offices: Pittsburgh, Pa.

ALL BRONZES • MONEL METAL
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First Ours— Now Yours

THE GROWTH OF THREE PUBLIC SERVICES IN MIDDLE AMERICA



IN TRANSPORTATION:

Our original need was ships to move our bananas. Soon it became apparent that the fleet could offer a wider service to the Americas. Today, the Great White Fleet, especially designed for the Caribbean trade, carries thousands of passengers every year between the Americas. Diplomats, educators, industrialists, and vacationists travel on these ships. Thus, with each succeeding year, more and more of the travel public learns more and more about the Americas.



IN MEDICAL SCIENCE:

As workers first cleared jungle swamps along the Caribbean, our medical staffs moved in to battle malaria and yellow fever—to protect the workers' health—and to create sanitary areas of population. This, too, became a public service. * * * Today, United Fruit's medical organization embraces 13 hospitals, 106 dispensaries, 9 domestic medical centers—has a staff of 1,802. In the past year, our facilities and services were available to 200,000 citizens of the Middle American Republics. Significant research contributions have also been made in the field of tropical medicine.



IN COMMUNICATIONS:

As early as 1904, when radio was in its infancy, instantaneous contact between markets, plantations and ships became vital. Therefore, we developed an internal communications system. Inevitably, this system was destined to serve the public interest and, accordingly, the Tropical Radio Telegraph Company was organized. * * * Today, TRT owns or has affiliations with 40 radio-telegraph stations, in addition to those aboard our Great White Fleet, and plays an integral part in trade and cultural relations throughout the Western World.

UNITED FRUIT COMPANY

Pier 3, North River, New York 6, N. Y., WHitehall 4-1700
New Orleans: 321 St. Charles St., New Orleans 4
Chicago: 111 W. Washington St., Chicago 2
San Francisco: 1001 Fourth St., San Francisco 7

BRITISH HONDURAS ★ COLOMBIA ★ COSTA RICA ★ CUBA ★ DOMINICAN REPUBLIC ★ EL SALVADOR
GUATEMALA ★ HONDURAS ★ JAMAICA, B. W. I. ★ NICARAGUA ★ PANAMA ★ PANAMA CANAL ZONE

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4



Complete Repair and Conversion Service
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At Our Yards or at Loading Berths

FOR YOU...

FOUR YARDS ON THE PACIFIC COAST . . . GEARED FOR FAST ROUND-THE-CLOCK SERVICE

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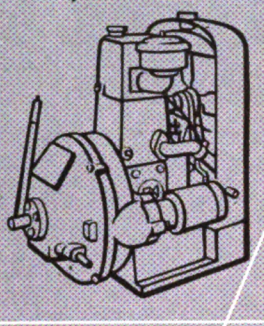
San Francisco—1401 Illinois St. MISSION 7-4520
Tacoma—2506 East 11th St. MARKET 7188
Seattle—Pier 66. MAIN 3122
Winslow—Port Blakely, Washington. Phone 500.

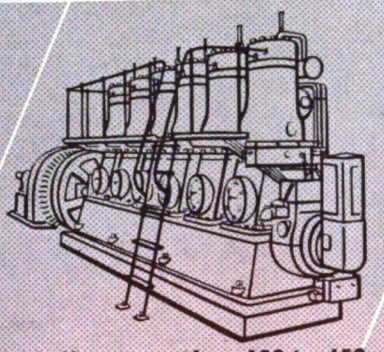
COMMERCIAL SHIP REPAIR

GENERAL OFFICES: PIER 66, SEATTLE (4), WASHINGTON
J. J. FEATHERSTONE — E. A. BLACK

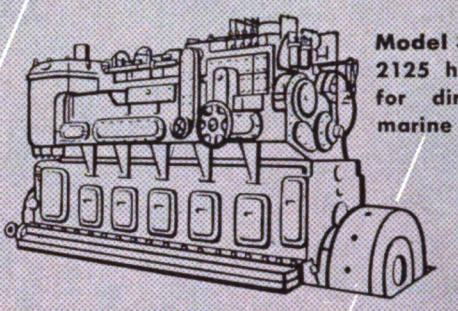
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Model 45B: 5¼ horsepower engine for stationary and marine service.



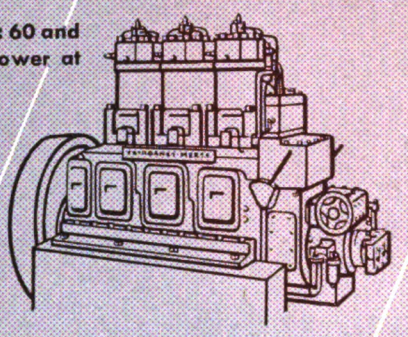


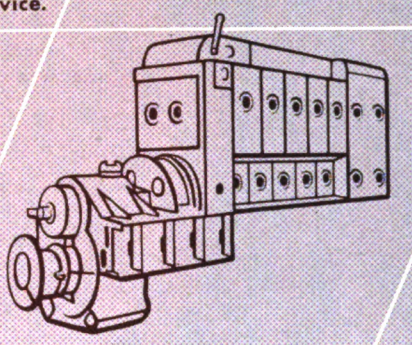
Model 32: Horsepower from 120 to 450. For slow-speed heavy-duty service.



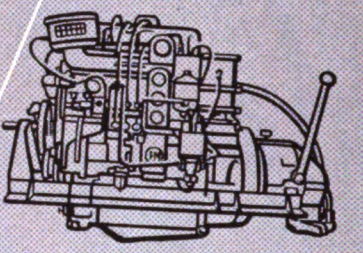
Model 37: 500 to 2125 horsepower for direct drive marine service.

Model 42: 60 and 90 horsepower at 450 r.p.m.

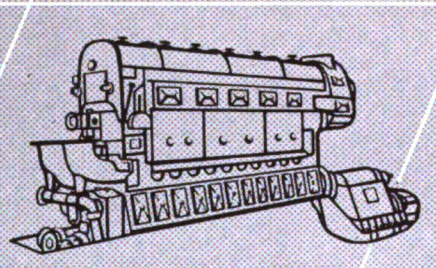




Model 31: Horsepower from 175 to 500; with 2 to 1 reduction gears optional for marine service.

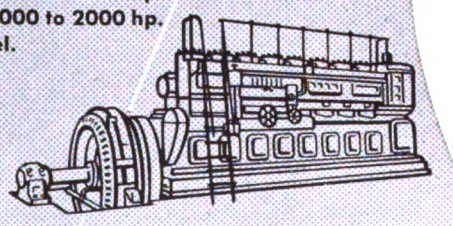


Model 48 Marine Engine: Also available for stationary or portable service. 3.5 to 80 hp.



Model 38 Opposed-Piston Engine: Horsepower from 960 to 1920 with 2 to 1 reduction gear for marine service.

Model 33 Stationary Engine: 500 to 2000 hp. Diesel, 1000 to 2000 hp. Dual Fuel.



When it comes to Diesel Power . . .

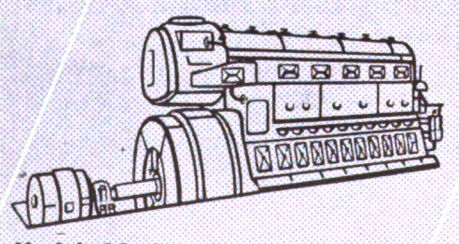
From 3.5 hp. to 3500 hp.

Low-cost, efficient power for all marine services . . . modern, dependable power for newest, fastest road locomotives . . . economical power for largest to smallest municipal and industrial plants . . . Fairbanks-Morse is the proved source for the full range of diesel applications. For skilled assistance and impartial recommendation for the diesel for your specific service, write Fairbanks, Morse & Co., Chicago 5, Ill.

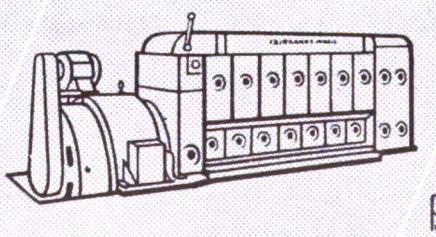
FAIRBANKS-MORSE

A name worth remembering

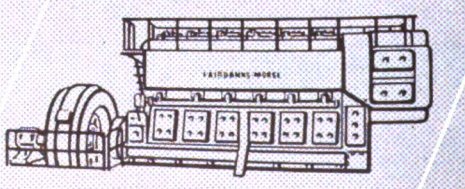
DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES
MOTORS • GENERATORS • STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS



Model 38 Opposed-Piston Engine: 960 to 1920 horsepower at 720 r.p.m.

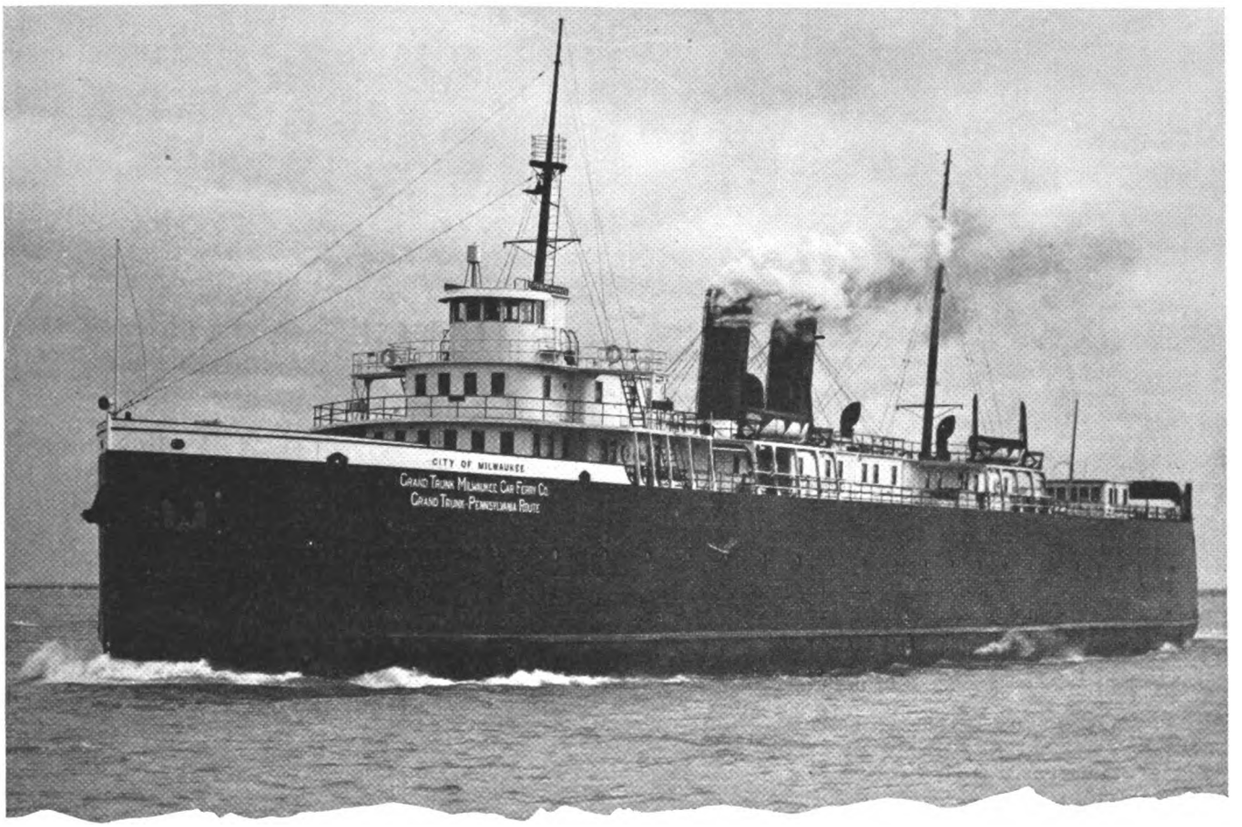


Model 31: Diesel generating set with kw. ratings from 118 to 360. Marine and stationary—Dual Fuel available in larger sizes.



Model 31: 2100 to 3500 horsepower diesel or dual fuel engine for heavy-duty stationary service.

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A Salute to GRAND TRUNK WESTERN SYSTEM

whose car ferries successfully overcome rugged winter winds and ice

Rugged weather proves no deterrent to the car ferries operated every day in the year across Lake Michigan by the Grand Trunk Western System.

All winter long the vessels are faithful to their daily schedule, making the 89-mile trip between Muskegon and Milwaukee, despite turbulent water and ice floes.

Dearborn is pleased to have a share in the dependable service rendered by the sturdy fleet by supplying water treatment formulas to keep boiler water free from scale and boilers at top operating efficiency.

Dearborn
Reg. U. S. Pat. Off.

THE LEADER IN BOILER WATER TREATMENT AND RUST PREVENTIVES

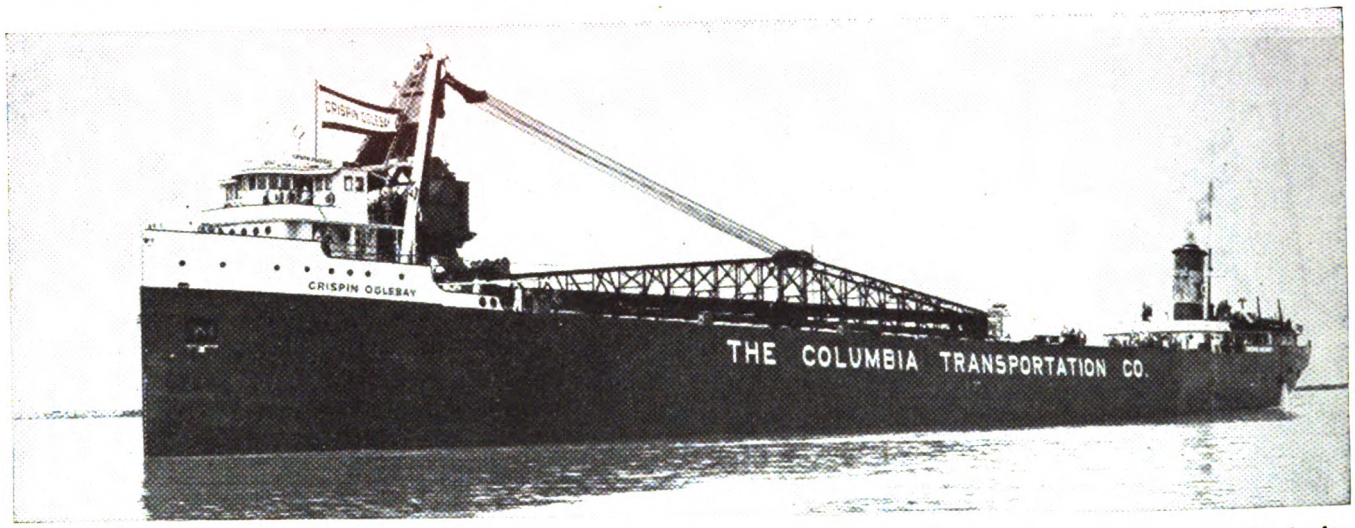
DEARBORN CHEMICAL COMPANY, MARINE DIVISION
WATER TREATMENT AND ENGINEERING SERVICE
also Diesel Cooling Water Treatment, Cleaning Compounds, and NO-OX-ID Rust Preventives
205 E. 42nd St., New York 17, N. Y., Telephone: Murray Hill 4-2812
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SELF-UNLOADER
DISCHARGES 2200

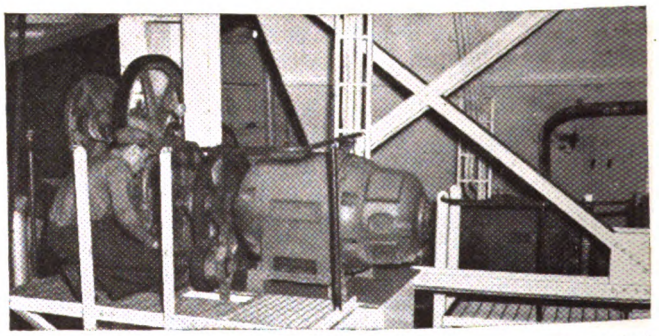
SS Crispin Oglebay's new, all-electric conveyor system—powered by G-E turbines, motors and control—permits this vessel to put in at more ports, make quicker turn-arounds.



The 240-foot boom conveyor on the Columbia Transportation Company's SS Crispin Oglebay, longest ever used on a self-unloader, is almost half the ship's length. In unloading, port and starboard hold conveyors bring cargo of limestone or coal to a forward elevator conveyor, which takes it up to a hopper at the pivot end of the boom conveyor. Conveyors are driven by four G-E induction motors totalling 750 hp. They help increase unloading speed from a normal 1800 long tons per hour—for ships of this type—to 2200.



Safety and reliability mark the G-E conveyor control. Because of the type of cargo handled, all control stations are totally enclosed and dust-proof. This is the 900-kw main switchboard for the ship's turbine-generators.



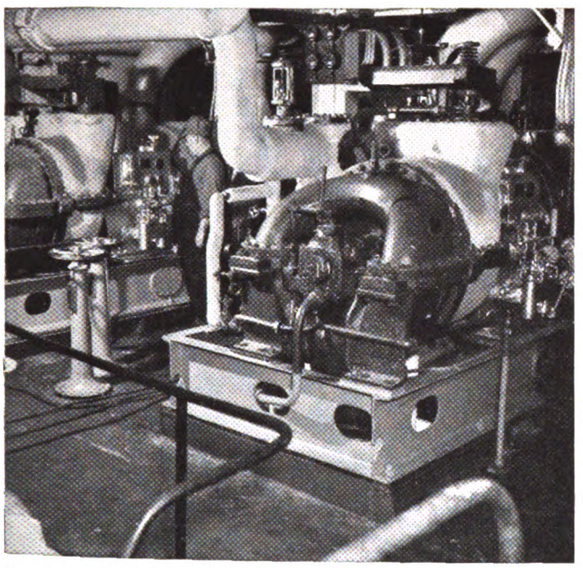
Port and starboard hold conveyor belts are driven at 325 feet per minute by these two G-E 100-hp motors. For oiling and maintenance, auxiliary slow-motion drive is provided, with the hold and elevator belts each operated by a G-E 1-hp motor.

—GENERAL ELECTRIC—

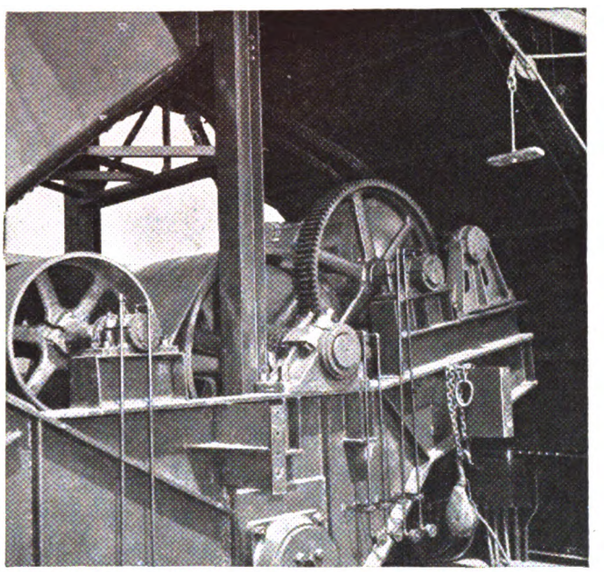
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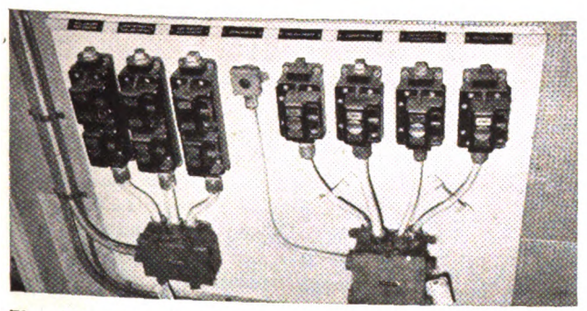
SETS FAST PACE, TONS PER HOUR !



Converted from a 40-year-old bulk freighter by the American Shipbuilding Company, the self-unloader can now put into ports that have inadequate unloading facilities. Power for all the unloading equipment is supplied by two G-E turbine-generators.



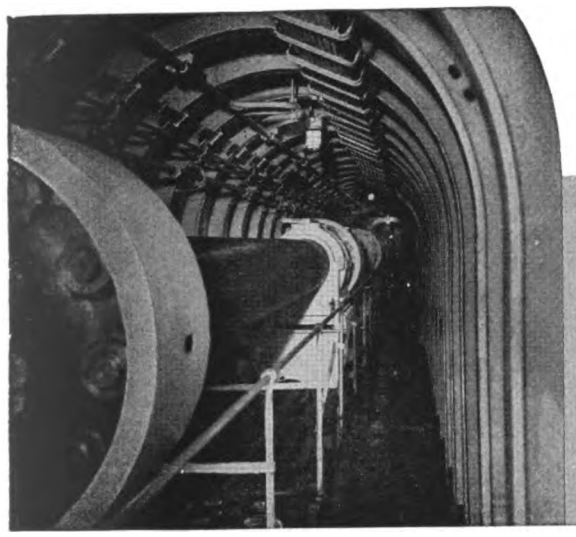
When the huge boom is swung out, it can discharge cargo up to 230 feet away. This G-E 300-hp motor, by means of the large gears shown, drives the boom conveyor at a speed of 425 feet per minute.



The ship's unloading conveyors can be operated either individually or in sequence. The conveyors can be started and stopped from a main control panel, and also from the remote control station shown here, equipped with seven G-E CR2940 push-button switches.



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SHAFT ALLEY Chatter

Moore-McCormack Elects Ivan Eby Vice President

The election of Ivan D. Eby as vice president of Moore-McCormack Lines was announced by Albert V. Moore, president of the company.

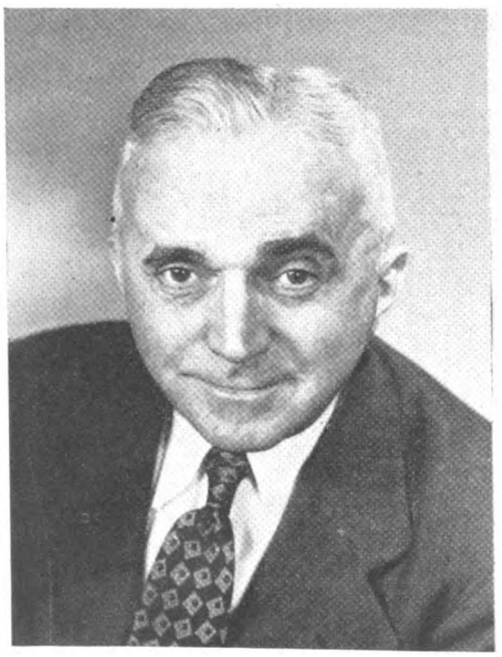
Mr. Eby, superintendent engineer of Moore-McCormack Lines, joined the company in 1920 after a varied career in railroading and at sea. A native of Waterloo, Ontario, Canada, he took his first job with the Canadian Pacific Railroad as a machinist and locomotive fireman. He went to sea in 1910 with the Pacific Coast Steamship Company as an oiler and worked himself up to Chief Engineer. He also served with several other lines in the coastwise and trans-Pacific passenger trades, and was a naval lieutenant in the First World War. In June, 1919, he served as Chief Engineer with the Shipping Board, predecessor to the Maritime Commission, and came ashore to join Moore-McCormack Lines in January, 1920.

During the Second World War Mr. Eby was directly responsible for the maintenance and engineering efficiency of a fleet of more than 150 ships when Moore-McCormack Lines transported 754,239 troops and carried 34,410,111 tons of war cargoes.

Mr. Eby is a member of the Society of Naval Architects and Marine Engineers, The Society of Marine Port Engineers of New York, N. Y., Inc., and the Propeller Club.

⚓ ⚓ ⚓

IVAN D. EBY, Superintendent Engineer of Moore-McCormack Lines, recently elected Vice President of the company.



Ingersoll Named General Manager Bethlehem PC Yards

D. D. Strohmeier, vice president, Bethlehem Steel Company, Shipbuilding Division, has announced the appointment of T. C. Ingersoll as general manager of the Pacific Coast District of the Shipbuilding Division. This district includes the Bethlehem San Francisco, Alameda and San Pedro, California, yards.

Mr. Ingersoll succeeds M. W. Laughton who is retiring from active duty as general manager, but who will continue with the company on a consultant basis.

Starting his career as a shipfitter's helper, Mr. Ingersoll joined the Bethlehem organization on the Pacific Coast as draftsman in 1936. In 1944 he was named manager of the San Francisco yard, a capacity he retains in his new post. He also was manager of the Bethlehem-Alameda Shipyard, Inc., which built eight P2 type transport ships for the Navy during the war, and more recently, the American President Lines' luxury passenger ships, the PRESIDENT CLEVELAND and PRESIDENT WILSON. The Bethlehem-Alameda Shipyard, which was operated for the U. S. Maritime Commission by Bethlehem, was closed after completion of the two passenger ships.

T. C. INGERSOLL, newly appointed general manager of the Pacific Coast District of Bethlehem Steel Company's Shipbuilding Division. The District comprises Bethlehem's San Francisco, Alameda and San Pedro shipyards.



⚓ ⚓ ⚓

Ocean Agencies, San Francisco, has been named agents in that city for the Girdwood Shipping Co., Seattle.

⚓ ⚓ ⚓

Canadian Gulf Line Adds New Ship to Fleet

Canadian Gulf Line, Ltd., recently added the mv FRANCIS SALMAN to its Pacific Coast service between British Columbia and California ports, carrying newsprint south and general cargo north.

The mv POWELL RIVER is now in this trade, running between Powell River and Vancouver, B. C., and San Francisco. The FRANCES SALMAN will operate between the British Columbia ports and Long Beach.

Canadian Gulf Line also has a fleet of five vessels carrying newsprint south from eastern Canadian ports to the Gulf of Mexico and returning northbound with sulphur.

All these vessels are Norwegian built and manned and chartered by Canadian Gulf Line. Cargo handling in California is done by the Marine Terminals Corporation. The Fred Olsen Line is the company's booking agent at San Francisco and Los Angeles. Kingsley Navigation Co., Vancouver, is the charterers' general west coast agent.

Owner of Canadian Gulf Line is Colonel William Salman of Las Vegas, New Mexico. Colonel Salman is chairman of the board of directors and B. A. Grauer of Houston, Texas, is president. The company's head office is at Houston, Texas, and Raymond Edmonds is general manager. D. K. Moore is agent at San. Francisco.

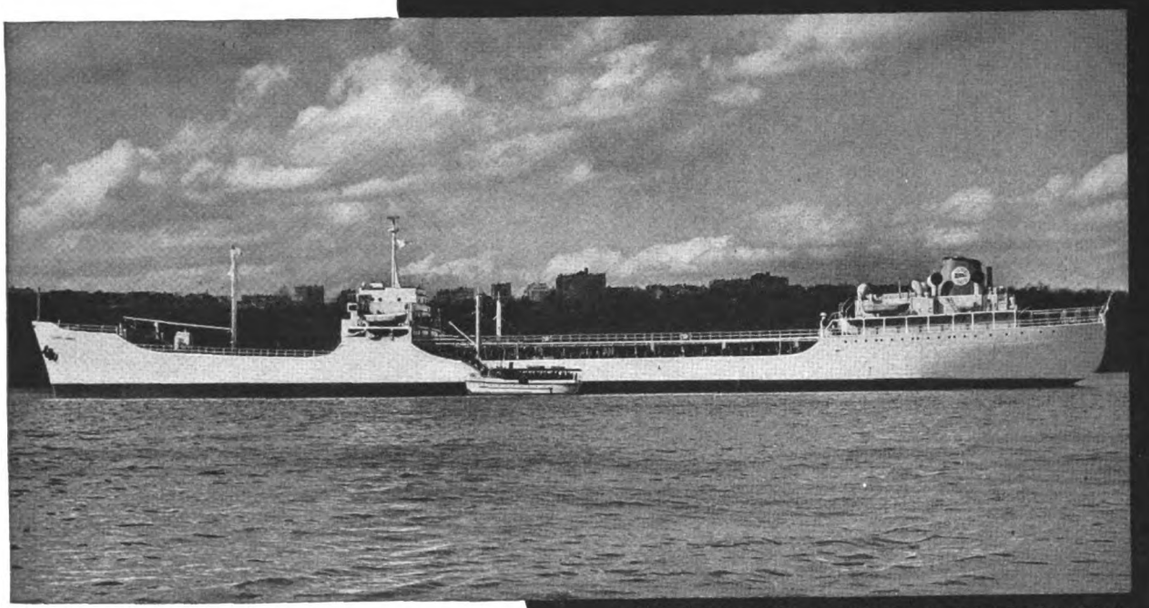
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At the close of the fiscal year, March 31, cotton shipments for Houston, including those by rail, rose to 1,264,925 bales, as compared to 1,185,786 last year.

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a debut

first to be delivered in the new tanker program



S.S. OLYMPIC GAMES, new 18,000-ton tanker, is the first of sixty-nine post-war tankers on order in American shipyards. The new vessel was built for the Olympic Lines by the Bethlehem-Sparrows Point Shipyard where seven similar vessels are under construction. The OLYMPIC GAMES combines a large cargo capacity with a yacht-like appearance and operates fully loaded at a speed of approximately 15 knots. She is radar equipped and all quarters are air-conditioned. The vessel was completed in 227 days after keel-laying, an exceptional record for peacetime tanker construction. The OLYMPIC GAMES is one of the many tankers which will be powered by FOSTER WHEELER steam generators.

Foster Wheeler is participating

. . . . . in the new program by furnishing steam generators and accessories—not only in the 18,000-ton class—but also in the 28,000-ton class. It is of interest to note that cast iron economizers are being installed in all Foster Wheeler equipped ships.

Among the products supplied to the marine industry by Foster Wheeler are:

steam generators	air ejectors
condensers	vacuum refrigeration
distillers	economizers
superheaters	air-conditioning units

FOSTER WHEELER CORPORATION • 165 BROADWAY, NEW YORK 6, N. Y.

FOSTER WHEELER

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SHAFT ALLEY (continued) Chatter



ROLAND D. ANDERSON, newly-named manager of Dravo Corporation's shipyards at Wilmington, Delaware.

With the company since 1928, Mr. Anderson has held the positions of superintendent of the Stockton, California, shipyard, general hull superintendent, and since 1946 has been plant superintendent at the Wilmington yard.



MASTER OF THE NEW SS LAGUARDIA. . . . CAPTAIN HUGH L. SWITZER, who has been appointed to command the new 18,000-ton passenger liner which recently entered American Export Lines New York-Italy express service. CAPTAIN SWITZER was cited for heroism as Master of the company's SS EXCELLER during the Allied invasion of North Africa in 1942. The LAGUARDIA has just been refitted by the United States Maritime Commission at a cost of $5,000,000.

Capt. Switzer Appointed Master of SS LAGUARDIA

L. S. Andrews, operating manager of American Export Lines, has announced the appointment of Captain Hugh Lee Switzer of Westport, Connecticut, as Master of the line's new 18,000-ton passenger liner ss LAGUARDIA. The LAGUARDIA is running the New York-Italy service on a 10-day express service.

Captain Switzer will command a crew of 350 officers and men on the LAGUARDIA, which has just undergone a $5,000,000 reconditioning by the United States Maritime Commission. He joined American Export Lines in 1924 as a Second Officer, and served on various company vessels as Chief Officer or Master. He became a Master in 1934.

Second in command of the 20-knot ship will be Chief Officer Gordon D. McAllister of Brooklyn. Chief Engineer will be Henderson Banks of St. Albans, Queens. Charles Tognotetto-Regis of Washington, D. C., will be Chief Steward and H. M. Gillespie, Jr., of Spring Lake, N. J., Chief Purser.

In the deck department the Second Officers will be William F. Wheeler, Walter J. Benson and Gordon P. Parker, with Curtis Craig, William Ommundsen and Anthony Di Radi as Third Officers.

Under Chief Engineer Banks will be Louis T. Smallwood, First Assistant Engineer; James L. Whiting, Frederick W. Hirst and Marshall Drumm, Second Assistant Engineers, and Thomas J. Berry and C. Ward Chapman, Third Assistant Engineers.

Chief Officer McAllister joined American Export Lines in 1937, as an able bodied seaman and became a Third Officer two years later. During the war he served as both a Master and Chief Officer. Mr. Banks has been with the line since 1931, when he became a water tender. He was made a Junior Engineer in 1934 and a Chief Engineer in 1942.

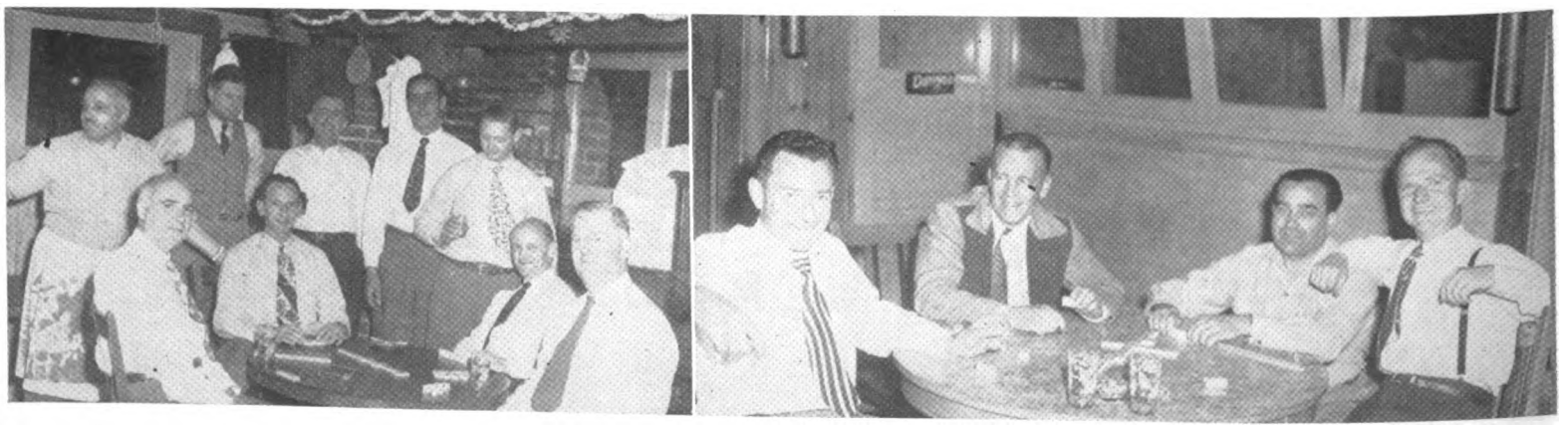
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Olympic Steam to Operate Pier 48 at Seattle

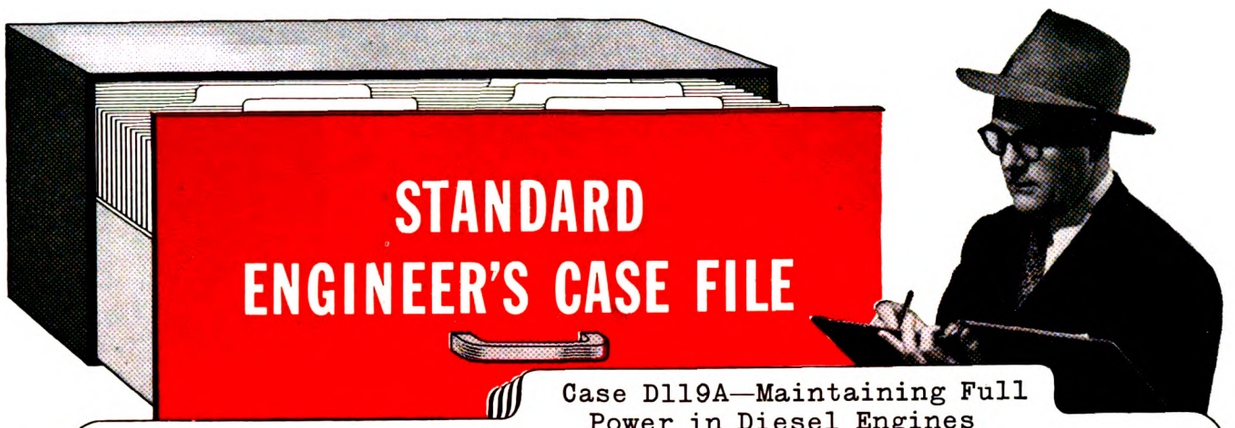
E. C. Bentzen, president, Olympic Steamship Company, has announced expansion of that company's activities in terminal operations at Seattle through signing of a long term lease with the Pacific Coast Company for Pier 48. The company plans to operate the additional pier in conjunction with Pier 28, where company head offices are located and where volume has increased since management of Pier 28 was taken over in 1943 to require other space.

Pier 48 has been operated by Pope & Talbot, Inc., for many years. The transit shed covers an area of 120,000 square feet, and with slips 282 feet on one side and 260 feet wide on the other, the pier has berthing space 1800 feet in length. Lease arrangements intend that Pope & Talbot, Inc., will continue use of the pier as office headquarters as well as for berthing of their vessels.

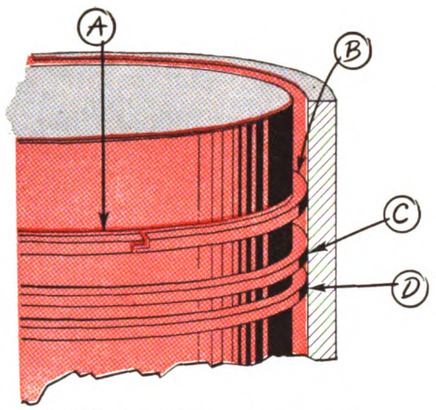
JIM EITZE GIVEN DOMINO FAREWELL PARTY by Southern California shipping associates as he leaves his post as pier superintendent for the Isthmian Steamship Co. at Long Beach to move to San Francisco to take charge of all west coast operations for his company.
Left to right: Standing, JOE COSTELLO, Jos. M. Costello Supply Co., host of the party; AL SEMNACKER, Isthmian; FRANK CAVANAUGH, Cavanaugh Machine Works; JOHNNY ZANNELLA, Costello Supply Co., CHARLES "CHUCK" MARQUARDT, Pacific Far East Line. Seated: ARTHUR O. WOLL, General Petroleum Co.; J. E. EITZE, AL BORO, Costello Supply Co. and LLOYD MOORE, General Petroleum Co.; TED ROSENER and JOHN LINDGREN, Pope & Talbot Line; JOHN DAULLEY, Mathis & Luc and LARRY MACK, Smith, Rice Derrick Barges, Inc.
F. E. PATE succeeds Mr. Eitze as pier superintendent for Isthmian at Long Beach.



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Operators of Diesels in all types of service report RPM DELO Diesel Engine Lubricating Oil materially reduces power loss in three ways:

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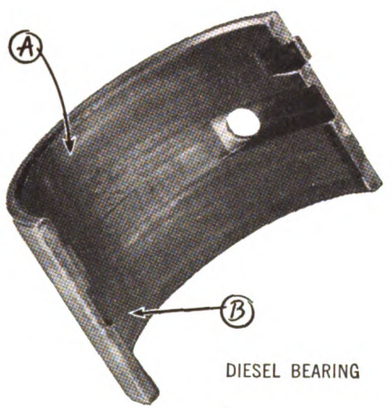
B. Metal-adhesion additive keeps full oil film on hot upper cylinder walls. These danger areas are often left unprotected by many oils.

C. RPM DELO Oil maintains a tough oil seal that stops blow-by of combustion gases.

D. An anti-oxidant increases the inherent stability of RPM DELO Oil's selected base stocks and resists lacquer formations on liners and piston skirts.

Other additives in this pioneer compounded oil prevent foaming, and control gum formations.

Case D119B—Preventing Frequent Bearing Replacement Due to Corrosion



DIESEL BEARING

In normal operation, Diesel engines require excess oxygen and operate at high temperatures. Under these conditions many unstable lubricants tend to turn corrosive and attack the lead in the copper-lead structure of alloy bearings. RPM DELO Diesel Engine Lubricating Oil is especially compounded to prevent this cause of bearing failure.

A. Selected base stocks are used that are naturally resistant to oxidation, the cause of most bearing corrosion.

B. Anti-oxidation compounds in RPM DELO Oil further reduce the danger of corrosion.

In laboratory corrosion tests, copper-lead bearing strips immersed in RPM DELO Diesel Engine Lubricating Oil showed considerably less weight loss than those protected by similar type oils.

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SHAFT ALLEY (continued) Chatter



ANNUAL WATERFRONT NIGHT AT TACOMA was staged on May 6 with the Propeller Club, Port of Tacoma and the Transportation Club of Tacoma joining forces. Left to Right: SHELBY COATES, Harbormaster, City of Tacoma, Propeller Club president; MORT WOODWARD, Baker Dock Company, president, Transportation Club of Tacoma.

Shipbuilders Council Elects Officers

At the directors' meeting of the Shipbuilders Council of America H. Gerrish Smith was re-elected president; L. R. Sanford, executive vice president; Roger Williams and Winder R. Harris, vice presidents, and Clifford C. Knerr, secretary-treasurer.

Directors elected for a three-year term are John F. Metten, chairman of the board, New York Shipbuilding Corporation, Camden, N. J.; J. A. Moore, Sr., chairman of the board, Moore Dry Dock Company, Oakland, Calif.; R. W. Marvin, vice president, Dravo Corporation, Pittsburgh, Pa.; Robert Haig, vice president, Sun Shipbuilding & Dry Dock Company, Chester, Pa.; C. S. Rogers, president, Norfolk Shipbuilding & Dry Dock Corporation, Norfolk, Va., and J. M. Griser, president, Alabama Dry Dock & Shipbuilding Company, Mobile, Ala. E. A. Hodge, vice president, Pusey & Jones Corporation, Wilmington, Del., was elected to fill the balance of a three-year term expiring in 1951.

Directors elected for a one-year term are J. G. Craig, president, Craig Shipbuilding Company, Long Beach, Calif.; W. L. Mingledorff, Sr., president, Savannah Machine & Foundry Company, Savannah, Ga.; G. W. Gibbs, Sr., chairman of the board, Gibbs Corporation, Jacksonville, Fla.; J. V. Santry, president, Combustion Engineering-Superheater, Inc., New York City; W. E. Addick, New York, manager, Cutler-Hammer Company, Inc., and A. W. Kauffman, vice president, Hopeman Brothers, Inc., New York City.

Other members of the Board of directors are W. S. Newell, president, Bath Iron Works Corporation, Bath, Maine; Monro B. Lanier, president, The Ingalls Shipbuilding Corporation, Pascagoula, Miss.; L. Y. Spear, chairman of the board, Electric Boat Company, Groton, Conn.; W. H. Gerhauser, president, The American Ship Building Company, Cleveland, Ohio; D. D. Strohmeier, vice president, Bethlehem Steel Company, Shipbuilding Division, New York City; Homer L. Ferguson, chairman of the board, Newport News Shipbuilding & Dry Dock Company, Newport News, Va.; James C. Merrill, president, Merrill-Stevens Dry Dock & Repair Company, Jacksonville, Fla:; George H. French, president, The Maryland Drydock Company, Baltimore, Md., and John D. Reilly, president, Todd Shipyards Corporation, New York City.

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PRESIDENT of the Bilge Club, Los Angeles is FLOYD G. NELSON, Assistant Marine Superintendent at Wilmington for The Texas Company.

New Officers Head Bilge Club Activities

Texaco marine men now head up two waterfront organizations in Southern California. Dan Dobler, marine superintendent for that company at Wilmington, is president of The Society of Port Engineers, Los Angeles, and his assistant, Floyd G. Nelson, has been elected president of the Bilge Club there.

New directors of the Bilge Club are Hampton Neergaard, Burns Steamship Co.; John Marriner, Craig Shipbuilding Co.; Earl Archibald, Sunset Oil Co.; Fred H. Cordes, Hillcone Steamship Co.; J. J. Buntin, Forster Shipbuilding Co., and Gilbert Reeves, Tidewater Associated Oil Co. Bob Snodgrass was reelected secretary.

Saturday, June 25, was set as the date for the club's annual picnic.

UNITED STATES LINES . . . Quarter Century Club holds dinner including representatives from London; Liverpool; Montreal; the Boston area; Washington, D. C.; Baltimore; Philadelphia; New Castle, Delaware and Nutley, N. J., as well as officers of the line and its vessels aboard flagship AMERICA at Pier 61, North River, N. Y., as guests of the company. ALFRED DeSMEDT, President, who has 45 years of service, presided. The Club's membership includes 107 members still on service with the line and 63 retired on pension.



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SHAFT ALLEY (continued) Chatter

Formosa Succeeds Harlow With Williams, Dimond & Co.

Stafford S. Harlow, who has retired after 28 years service with the American-Hawaiian Steamship Co., was the guest of honor at a farewell luncheon given by the Los Angeles Steamship Association in April. On behalf of friends, he was presented with a golf "kiddie kart" by Leonard Formosa, who suceeds him as Southern California district manager of the Williams, Dimond & Co. and American-Hawaiian organizations.

W. B. Bryant, vice president of the association, presided at the meeting. Mr. Bryant is Southern California district manager of General Steamship Corporation.

At the meeting a framed certificate was presented to William A. St. Amant for his service as president of the association for two years. Mr. St. Amant is Southern California manager for the Grace Line. The presentation was made by the secretary of the association, Harry Dorr, resident manager at Los Angeles for Norton-Lilly & Co.

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Ship Model Tests Discussed By Northwest Naval Architects

Dr. Hans F. Mueller, in charge of engineering on cycloidal propulsion for Pacific Car and Foundry Company, Renton, Washington, delivered the principal paper at the April meeting of the Pacific Northwest section of the Society of Naval Architects and Marine Engineers.

On the subject of circulating water channel for ship model tests, the paper developed the historical background for evolvement of circulating water tests and with the use of drawings and graphs described operation details, to secure uniform velocity of flow, trimming, resistance, and an actual view of underwater flow and turbulence. The statement included results of varying types of tests and concluded:

"It is principally possible that a water channel can supplant the model basin. Since the former is cheaper and requires much less room, it will lend itself better to the needs of organizations with slim resources.

"Ship-hull form seems to be pretty well established today for all conceivable purposes. Further progress of important nature toward improvement of ship propulsion requires studies of flow details. This is because hull, propeller and rudder affect each other to an important extent which makes it almost impossible to separate the interference effects through overall tests. Apart from these, the past several years show evidently that model basins are becoming more and more engaged in all sorts of hydromatic problems which bear only the remotest resemblance to the problem of ship resistance. Especially the study of submerged objects calls for a circulating water channel because of the possibility of underwater observation and problems involving anchored objects in a current or ships passing a bridge can hardly be tackled in a towing basin at all."

H. C. Hanson, newly elected chairman, was officially installed by retiring Chairman W. H. Watkins with presentation of the section's gavel. The gavel, turned from a plank from the quarter deck of the battleship OREGON, had been presented to the section by Carl J. Nordstrom during ceremonies earlier in the meeting.

Committees to serve until May, 1950, were announced. Committee chairmen include: H. E. Lovejoy, meetings; R. R. Cunningham, welfare; F. G. Greaves, engineers licensing; W. H. Watkins, model basin; F. E. Blumberg, papers; J. L. Sweetin, membership.

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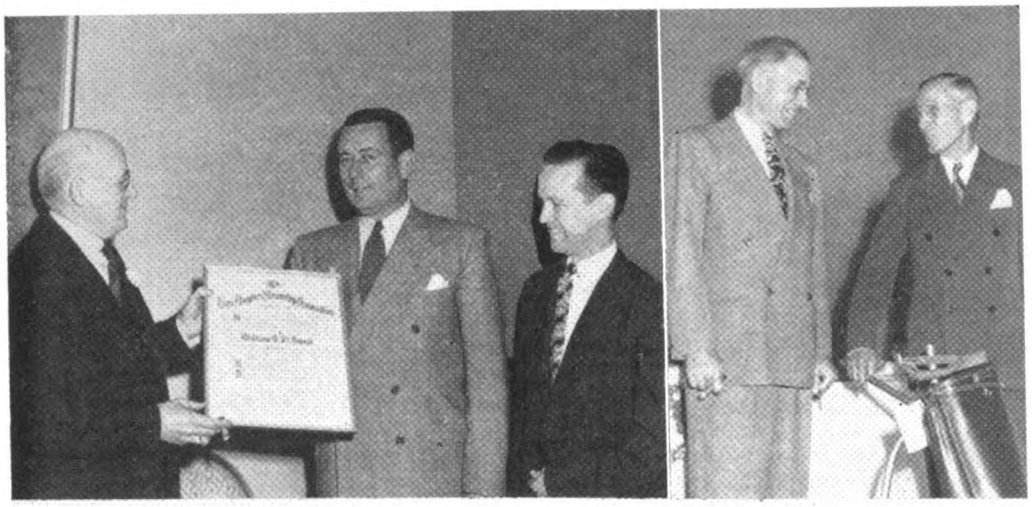
Zemurray Resumes Presidency of United Fruit Company

At its organization meeting the Board of Directors of the United Fruit Company elected as president Samuel Zemurray to succeed Thomas D. Cabot.

T. Jefferson Coolidge, Chairman of the Board, stated that Mr. Cabot, for personal reasons and on account of great pressure from other duties, did not wish to stand for reelection. Mr. Cabot was elected to the executive committee and intends to take an active interest in the company.

LOS ANGELES STEAMSHIP ASSOCIATION MEETS. . . . Left photo: HARRY DORR presents testimonial to BILL ST. AMANT for services as president of the Los Angeles Steamship Association for two years; W. B. BRYANT, General Steamship Corporation.

"STAFF" GETS A GOLFING KIDDIE KART, right photo: At the right is STAFFORD S. HARLOW, retiring from American-Hawaiian after 28 years and at the left is LEONARD FORMOSA, who succeeded him in Los Angeles.

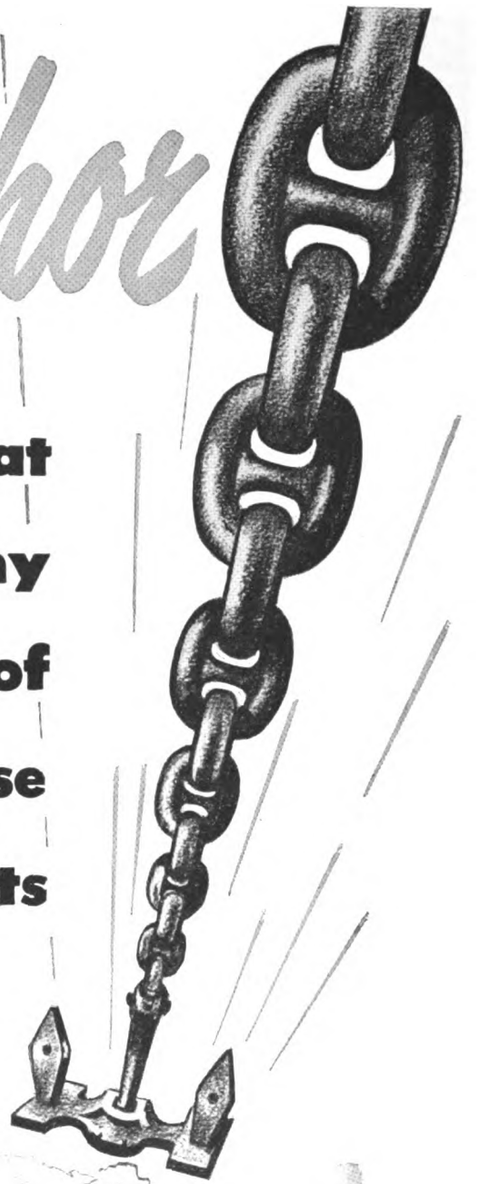




A GAVEL IS PRESENTED. C. J. NORDSTROM, center, presents a newly made gavel to W. H. WATKINS, right, retiring chairman of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers while incoming chairman H. C. HANSON, left, looks on; DR. HANS F. MUELLER, extreme right, Pacific Car and Foundry Company, speaker at the meeting.

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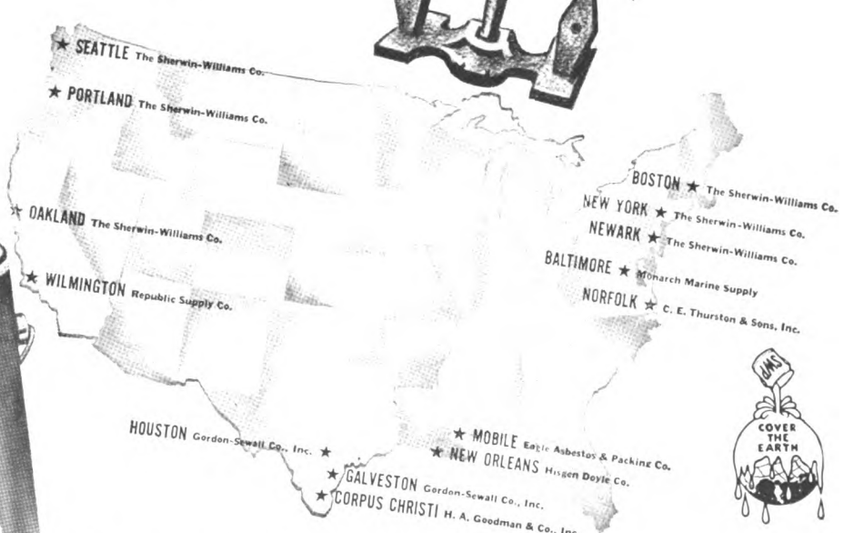
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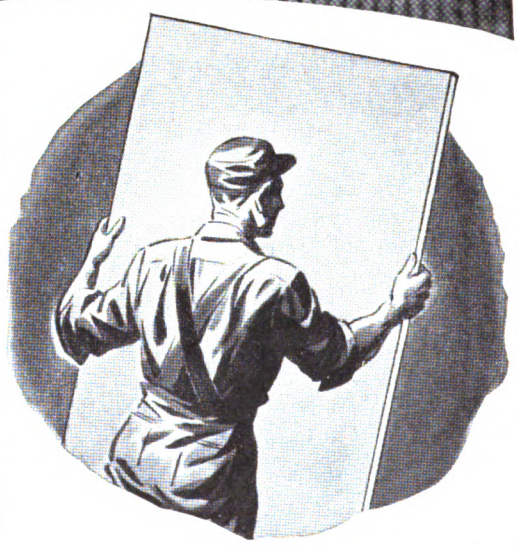
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Marinite is an asbestos product made by Johns-Manville expressly for marine work. It is fireproof, durable yet light-weight, easy to work, vermin-proof, and requires minimum maintenance.

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MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

JUNE, 1949 Vol. 44, No. 6

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Active U. S. Merchant Fleet Lists 1036 Cargo Carriers

The active American Merchant Marine (ocean-going vessels of 1000 tons and over) consists of 1566 vessels totaling 17,730,000 deadweight tons, the joint committee for the American Merchant Marine stated in its quarterly report.

Of this number, 1036 are cargo ships capable of carrying about 255,000 ordinary freight cars of cargo.

Four hundred sixty-eight are tankers, capable of carrying sufficient gasoline at one time to fill the tanks of about 140,000,000 automobiles or sufficient fuel oil to heat 1,250,000 homes for an entire winter.

Sixty-Two Liners

Sixty-two vessels, including those of "austerity" type are passenger carrying ships, capable of accommodating a total of 19,730 passengers.

The 1566 active ocean-going vessels in the American Merchant Marine are divided as follows:

1. 1134 privately owned and operated.
2. 389 government-owned, but being operated under charter or general agency agreement by private American owners or operators.
3. 43 government owned under charter to the department of the army.

81,000 Personnel

Approximately 81,000 officers and seamen are now employed on active American ocean-going vessels.

Of this number 17,200 are officers; 63,800 are seamen.

To keep this fleet active an estimated 150,000 steamship company shore employes, stevedores and longshoremen, and other shoreside workers, are regularly employed.

At present there are under construction in U. S. yards or on order 62 ocean-going merchant vessels.

Of this total, 57 are tankers, five are passenger carrying ships, none are for ocean-going dry cargo service.

Of the total under contract, 11 are for foreign owners and 51 are for American interests.

The report showed that skilled and semi-skilled workers employed in private shipyards on Pacific, Gulf and Atlantic Coasts, and the Great Lakes, now number 74,500.

There has been an increase of 1,000 in new building since the first of the year but a decrease of about 4,300 in ship repairing.

It is estimated that approximately 100,000 skilled and semi-skilled workers should be employed in the nation's private shipyards to maintain the nucleus of an adequate force in the event of an emergency.

There are 1,881 merchant vessels of 18,700,000 deadweight tons now in the nationel defense reserve fleet, the committee said.

The quarterly report also showed that excluding American merchant ships in the national defense reserve fleet, there are now 82,003,300 deadweight tons of merchant vessels in the world.

This compares to 80,601,000 deadweight tons of ocean-going merchant shipping in 1939.

Foreign Sales

From the passage of the Merchant Ship Sales Act of 1946 until congress prohibited foreign sales, the United States government sold 1,113 war-built American ships of more than 11,000,000 deadweight tons to help rehabilitate the merchant fleets of allied nations.

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Lloyd's Report Indicates Upward Trend In Shipbuilding

A resumption in the upward trend of postwar merchant shipbuilding may be indicated by returns just issued by Lloyd's Register of Shipping for the quarter ending March 31 last. For the first time since the prewar period, figures for Japan are included. Japanese shipyards are now constructing 144,180 gross tons of merchant vessels, a larger amount than the total now building in the British Dominions, Denmark, Spain, Norway or Belgium. Just prior to the war, Japan was reported to have more than 300,000 tons of ships under way.

Lloyd's figures cover the construction of all merchant vessels of 100 tons each and upwards in all maritime countries except Russia and Germany. A small tonnage of non-propelled vessels and sailing ships is not included in the returns.

In the quarter ending September 30, 1948, the world total of merchant shipping being built was 4,203,000 tons. In the December quarter, this figure dropped to 4,140,000 tons; but in the quarter ending March 31 last, it increased to 4,355,000 tons. Deducting the 144,000 tons now building in Japan, which did not figure in previous quarters, the current net total for world shipbuilding is 4,211,000 tons, or about 8,000 tons above the September peak. Although Great Britain and Ireland show a decline of 38,000 tons from their December figure, the United States reports a gain of about 56,000 tons, and the other maritime countries, taken together, (including Japan) increased their tonnage under way by nearly 200,000 tons.

Lloyd's Register shows, in the following gross tonnage table, a comparison of the shipping being built during the quarters ending March 31 and December 31 last:

	March 31, 1949	Dec. 31, 1948
Great Britain and Ireland	2,075,910	2,114,730
United States	463,579	406,848
Other Countries	1,816,016	1,619,238
WORLD TOTAL	4,355,505	4,140,816

Great Britain and Ireland are no longer building more than half of the world's merchant shipping. The percentage for these countries, which was 51.1% in the December quarter, is now 47.6%. In the

(Continued on Page 62)

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A POWER-PACKED TUG

FOR NEW YORK HARBOR . . .

(Story on Page 48)

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THE CASE FOR CONFERENCE

CONTRACT RATES

The conference system of contract rate-making is undergoing recurring attacks. Here Commodore Lee outlines the case for the defense.

By COMMODORE ROBERT C. LEE
Executive Vice President
Moore-McCormack Lines, Inc.

Our rate making is based wholly upon the conference system as sanctioned by Congress in the Shipping Act of 1916. The conference system means that steamship lines operating in a certain trade come together to formulate standards affecting that trade, freight rates included. They must comprise nearly a hundred per cent of all the responsible lines engaged in the trade and I know of no conference that fails to make a guaranteed minimum service by each line a requisite of membership.

To be sure, the fundamental purpose of the conference is to stabilize rates and eliminate cut-throat competition in the interest of ships as well as shippers. Under the conference systems the rates are uniform for all shippers, large and small. That is not so much the case where steamship companies operating independently of the conference set up their own rates at will depending on what may look good to them as a piece of business at a specific time. And least of all is it the case when the going is rough. Conference members by agreement cannot among themselves alone assure stability without some supplementary aid, such as a contract system. The ocean is a free right of way and without some such protective device any carrier on the high seas may move his ships into a given berth where business is good at a particular time; give service in that trade at cut rates for the period when cargoes are profitable and then move on to other fields when the cream is skimmed. This leaves the burden of service in that particular trade to the regular established lines operating therein and associated together in conferences.

Nothing but confusion can result from such a condition, not only to the carriers, but to shippers as well. A steamship line, with an investment in tonnage and terminals, with the necessity of long-range planning for improvement of service, could not survive if subjected to a series of such rate wars. It could mean only one thing, the eventual disappearance of the small operator before the greater weight of the big one, with monopoly and all the evils that monopoly brings. Shippers properly would be out shopping for the best available rate for the duration of the fight. When the smoke had cleared and one or two ship lines had survived, new companies would organize to wage a new war on these survivors, and so on, with the rates reflecting nothing but the ability of some operator to hang on.

Exclusive Patronage Contracts

Conferences generally therefore have adopted a system of contract and non-contract rates, in what has come to be called exclusive patronage contracts. Under these contracts, shippers agree to ship their business only by the lines members of the conference and in consideration therefore are given specific rates, usually arrived at by negotiation with the particular industry involved. And there is nothing strange or undercover about the contract. It is a quid pro quo contract for value received. If you gave someone a contract to build you a house you couldn't expect to let every cut-rate bricklayer that came along in on the job. To be sure the contract rates are lower than the tariff rates which apply on similar shipments made by shippers not having such contracts. Otherwise why contract. These contracts are available to all shippers alike and the rates set forth therein apply to small as well as large shipments, assuring all of equal treatment.

Congress' View of Conferences

Let me quote a Congressional committee on this subject of conferences and their influence on shippers. After an exhaustive investigation of the system it said:

"Uniform rates protect the small against the large shipper and relieve all shippers from the effects of underhanded discrimination. Under open competition powerful shippers, or a combination of shippers, can obtain preferential rates, while under a system of cooperation it is not to the interest of the conference to give special terms to powerful clients. Rate wars are detrimental to the interests of small shippers because the object in every rate war is to obtain the freight of large shippers by offering special rates. The inevitable result is a gradual monopolization of the trade in given commodities by the more powerful shippers."

So much for the principle.

Maritime Commission Rate Control

The differences in the practices before the I.C.C. and the U.S.M.C. are mainly due to the difference in the jurisdictions of the bodies. While the Maritime Commission procedures are formal and set forth in the RULES OF PRACTICE published by the Commission and persons are required to qualify as practitioners under specific rules, these procedures are not nearly as extensive as are those before the I.C.C. The reason is that the Maritime Commission does not have the same control over freight rates in foreign commerce as the I.C.C. has over domestic rail rates, interstate truck rates and domestic water rates. The jurisdiction of the Maritime Commission over rates in foreign commerce is very limited—it being without power to set aside rates established by steamship companies, except for reasons specified in the Shipping Act of 1916 as amended. This prohibits common carriers by water in foreign commerce from demanding, charging or collecting any rate, fare or charge which is unjustly discriminatory between shippers or ports or unjustly prejudicial to exporters of the United States as compared to their foreign competitors.

Lines associated in conferences are required by the Shipping Act to file an agreement with the Maritime Commission, setting forth in full detail the scope of the activities of the conference. Severe penalties are provided in the Act for operation under an agreement prior to its approval by the Commission. Generally, as a condition to its approval of these agreements, the Commission requires that the parties furnish it with a copy of all minutes. The Commission also requires that tariff rates, rules and regulations be filed with it within 30 days after effectiveness. The I.C.C regulations generally require the filing of 30 days advance notice and approval of any rate change whereas ocean carriers need only file their rates with the Maritime Commission as information and not for approval.

Sherman Anti-Trust Law

Ocean carriers in foreign trade operating under conference agreements approved by the Maritime Commission are exempt from the Sherman Anti-Trust law and acts supplementary thereto. The Maritime Commission therefore exercises rather close supervision over the activities of the conferences, having power to cancel its approval of all agreements and immediately force the disbandment of such associations.

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ADVANTAGES OF LONG-TERM RATE STABILITY

1. No inconvenience which would exist if merchants were obliged to quote different propositions on nearly every consignment thus eliminating undesirable speculative risk under open rate system.
2. Reduce complaints from importers abroad. Exporters have asserted that during periods of rate competition, complaints from foreign buyers are numerous if sales to them do not happen to be on the lowest basis of cost and freight, while if there is uniformity in rates, even though they be on a higher level, it is seldom foreign consignees complain.
3. Enables shippers and merchants to calculate laid down costs and sell goods for delivery within the period of their contract.
4. During periods of rate cutting buyers abroad generally pursue policy of buying from hand to mouth and shipowners are reluctant to make forward contracts at such cut-throat rates.
5. While competition in rates between regular lines ceases, competition in facilities continues.
6. Avoids losses to importers and inventories through sudden rate cuts.

So-called independent operators who do not work cooperatively or in agreement with other lines in any given trade are not burdened with the regulations of the Maritime Commission as are conference carriers and need only file with the commission such rates as they would make effective 30 days after they have become effective. These independent carriers are few in number, but loudly vocal in their attacks on the conference system and particularly the contract rate system adopted by most conferences operating to and from the U. S.

These independent carriers can of course make rates for their services on any basis they desire, giving such preferential treatment as they may see fit to large shippers friendly to them. This is evidenced in sworn testimony given in the hearing in Maritime Commission Docket 128 to the effect that one of these independent operators stipulated as a contingency to his joining the Far East Conference that he be permitted to quote lower rates to certain big shippers on certain specified commodities than the conference rates, which he would observe with respect to the shipments from others.

Deferred Rebate System

These attacks on the conference system by the non-conference operators are not so much directed at the conferences themselves as at the contract system of rates used by these conferences. They would like to have us tied in conferences without any possible means of defending ourselves.

Obviously if lines operating in a given trade have no contract system or other means of tying the regular shippers to them, such as the Eureopean Worldwide operators have through the Deferred Rebate System, the conferences then are placed in the position of holding an umbrella over the head of the non-conference operator who may place ships in a trade at infrequent intervals as may suit his purpose and cut rates sufficiently below the conference rates to attract cargoes to those ships. The contract system of rates used in the American trade is the protection of the conference from these raids. It is the main object of attack by these so-called independent operators. I agree that it does tie the shipping public to the conference lines and places those shippers who wish to use these spasmodic or infrequent services of independent operators in a position where they have to pay higher rates to the regular lines when independent service is not available and they must use the service of the regular lines.

Contract Rates

In the contract system the conferences stand ready to enter into agreements with any and all shippers, large and small alike. The shippers must agree to ship by conference lines generally all of their cargoes in a given trade and the conference agrees to afford the shipper the stipulated contract rates of freight. In connection with these contracts the conference establishes a tariff according to rates on each commodity, the contract rate and the non-contract rate. Naturally the former is the lower. The shipper who signs a contract and ships exclusively on conference vessels receives a lower rate than the shipper who retains freedom of action to ship by conference lines and by non-conference or tramp vessels when such suits his purpose.

Regular Service on Regular Routes

During the last half of the last century steam propelled vessels gained ascendency over sailing ships and made possible the establishment of regular services by regular lines on regular trade routes. The rapid increase in the number of steam vessels and the shortening of voyage time compared with that of sailing vessels resulted in services soon becoming overtonnaged and competition becoming so severe that rates fell to very low levels. The industry was threatened with ruin. This condition forced carriers operating liner services in the various trades to reach rate agreements and form conferences, which in turn endeavored to devise means of inducing the routing of cargo via their lines. The first conference which appears to have functioned with a reasonable degree of success is the Calcutta Conference, established in 1875 in the India/U. K. trade. Since its inception the legality of the conference system has of course been attacked by those whose interests are better served by a free open chaotic condition. Nevertheless the system has always been upheld in the investigations made of it.

British Contract System

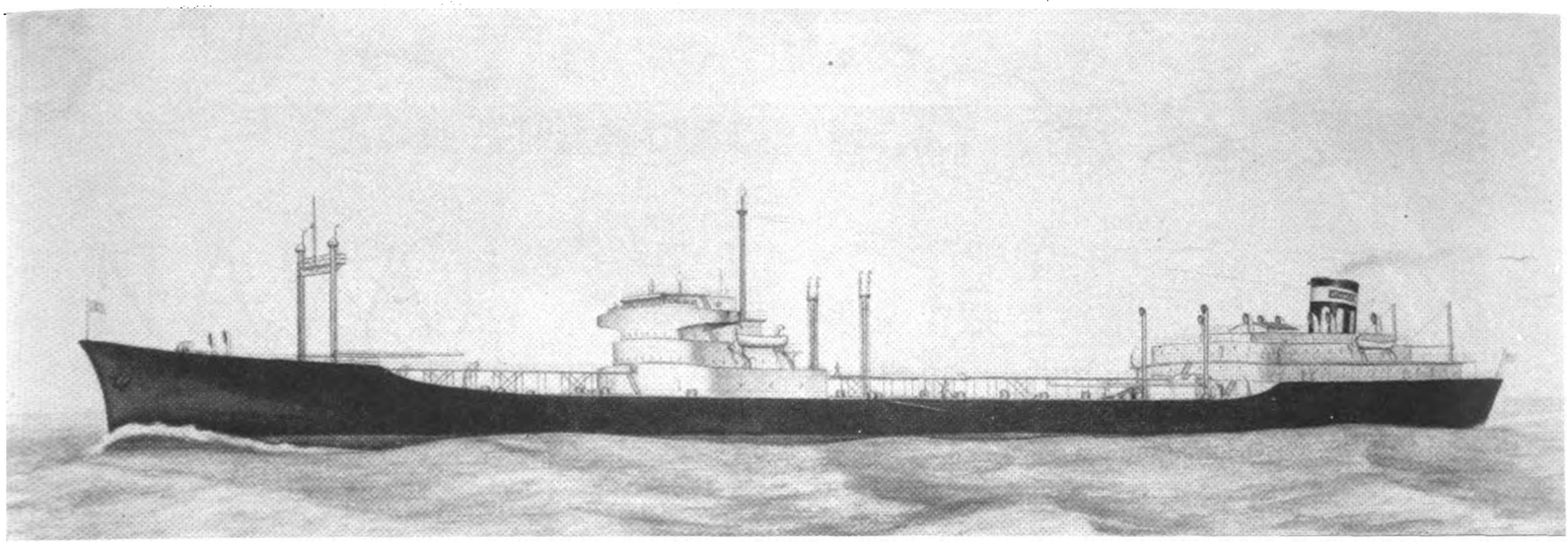
The ascendency of the British in international trade has long been more or less a by-word and it should be well for those of us concerned with American trade to give thought to the fact that the British have always fared well with the conference system and the tying of exporters and importers to the conference lines, even to the extent of a deferred rebate system which is used by confer-

(Continued on Page 35)

ADVANTAGES OF CONFERENCE CONTRACT RATES

1. Increased opportunities for shipping.
2. Fixed dates of sailing at regular intervals. These enable shippers to work with smaller stocks, reducing risk, storage charges, and interest on inventory.
3. Makes unnecessary booking cargo considerably in advance. Shippers incur no penalty or other inconvenience if unable or unwilling to book goods until last moment.
4. Merchants are enabled to make forward contracts for delivery of goods at a definite date.
5. A better distribution of sailings is secured.
6. Goods arriving late from interior points missing one steamer may be dispatched by another avoiding unnecessary port charges and the accumulation of goods at port.
7. Cargo is delivered in better order and with greater dispatch and regularity.
8. Carriers regularly employed are likely to be more responsible in claims matters.
9. Loss of interest on cargo in transit is reduced with regular and fast service.
10. Shippers are relieved of anxiety as to class of vessels by which freight will be shipped.
11. Insurance premiums on cargo are reduced, and the rate of insurance may be counted upon as more uniform and stable.

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ARTIST'S SKETCH of new large tanker being built by New York Shipbuilding Corporation, Camden, New Jersey, for Philadelphia Tankers, Inc.

New York Shipbuilding Lays Keel for First of 3 Tankers

The keel for the first of three tankers now under construction for Philadelphia Tankers, Inc., was laid by New York Shipbuilding Corporation, Camden, New Jersey, on April 18, 1949.

These tankers are among the largest now building, being 660 feet long, 85 feet beam, with a draft of 34 feet when carrying the full dead weight load of 30,000 tons. In crude oil the cargo capacity is 257,000 barrels, with the ships designed for a service speed of 17 knots. Keels for the second and third ships will follow at approximately two month intervals, with delivery of the first ship scheduled for May, 1950.

New York Ship recently initiated the shipbuilding program of the United States Maritime Commission by laying the keel for the first passenger-cargo liners for the American President Lines on March 28. It is anticipated that employment on these six commercial contracts and a Navy cruiser will reach approximately 5,000 by the beginning of next year.

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The Case for Conference Contract Rates

(Continued from Page 34)

ences in United States trade.

In 1914 after two years of investigation a committee of Congress known as the Alexander Committee submitted a report which constituted a landmark in the history of shipping. The committee outlined three methods which conferences have adopted in meeting outside competition, namely, the deferred rebate system, fighting ships and the contract system. The deferred rebate system provides that shippers who agree to employ exclusively steamers of conference lines in a given trade shall be allowed a rebate of a certain percentage of their freight payments, usually 5% or 10%, computed for a designated period. This was not paid until after a certain additional period, usually six months following the period for which it is computed, and then only on the condition that during the entire time, including both the period for which the rebate was computed and the period of deferment the shipper had given his exclusive support to the conference lines.

The Fighting Ship

The fighting ship is a vessel placed on berth at the same time and alongside the non-conference vessel, meeting the outside rate cuts and giving even lower rates as may be necessary to prevent the outside vessel securing cargo through its cut rates. The loss incurred on the fighting ship would be shared by all conference members who would be benefited by its protection. This, of course, was a deterrent to outsiders placing vessels on berth.

The contract system generally employed is familiar, we believe to all, since it is used more or less universally by conferences operating in and out of the U. S.

The Alexander Committee recommended that conferences be legalized but condemned the fighting ship, the deferred rebate and threats to refuse shipping accommodations. It did not condemn the contract system of rate making by conferences.

The recommendations of the Alexander Committee formed the basis of the Shipping Act of 1916, which created the Shipping Board now succeeded by the Maritime Commission as the regulatory body to act for and on behalf of the government in connection with shipping matters. In several cases before that board the conference contract system of rates has been found not to be illegal per se.

Recent M.C. Decisions

As recently as January 12, 1948, the Maritime Commission decided in Docket 648 in connection with the contract of the Pacific Coast European Conference that the retroactive penalty provisions of respondents contract rate system were unlawful but that the balance of the system were found to be lawful. Even more recently in Docket 681 Himalaya International versus American Export Lines et al the Maritime Commission examiner recommended that the system of contract and non-contract rates of the North Atlantic Mediterranean Freight Conference are not shown to violate the Shipping Act of 1916.

The conference contract system of rates varies of course in form and operation in the different trades, specific features which may be adopted from time to time in specific trades may be found to be improper or illegal, but the contract rate system as such has been found not to be illegal too often to leave much doubt in the mind of its advocates as to its legality under the laws of the U. S. Certainly in the minds of those who are constantly engaged in the import export business there should be little doubt of its benefits to ocean carriers, shipping public and American commerce in general. Through the Maritime Commission it affords a unique and powerful control over all regular lines, foreign and American, trading our shores, for without the contract I fully believe there would be no conferences.

We Will Pay You 50¢ For Your May LOG

If you have finished reading your copy of The LOG for May, 1949, will you do us a favor and mail it to either office?

We will not only appreciate it but will pay 50¢ for each copy. This offer is good for the first 50 copies received.

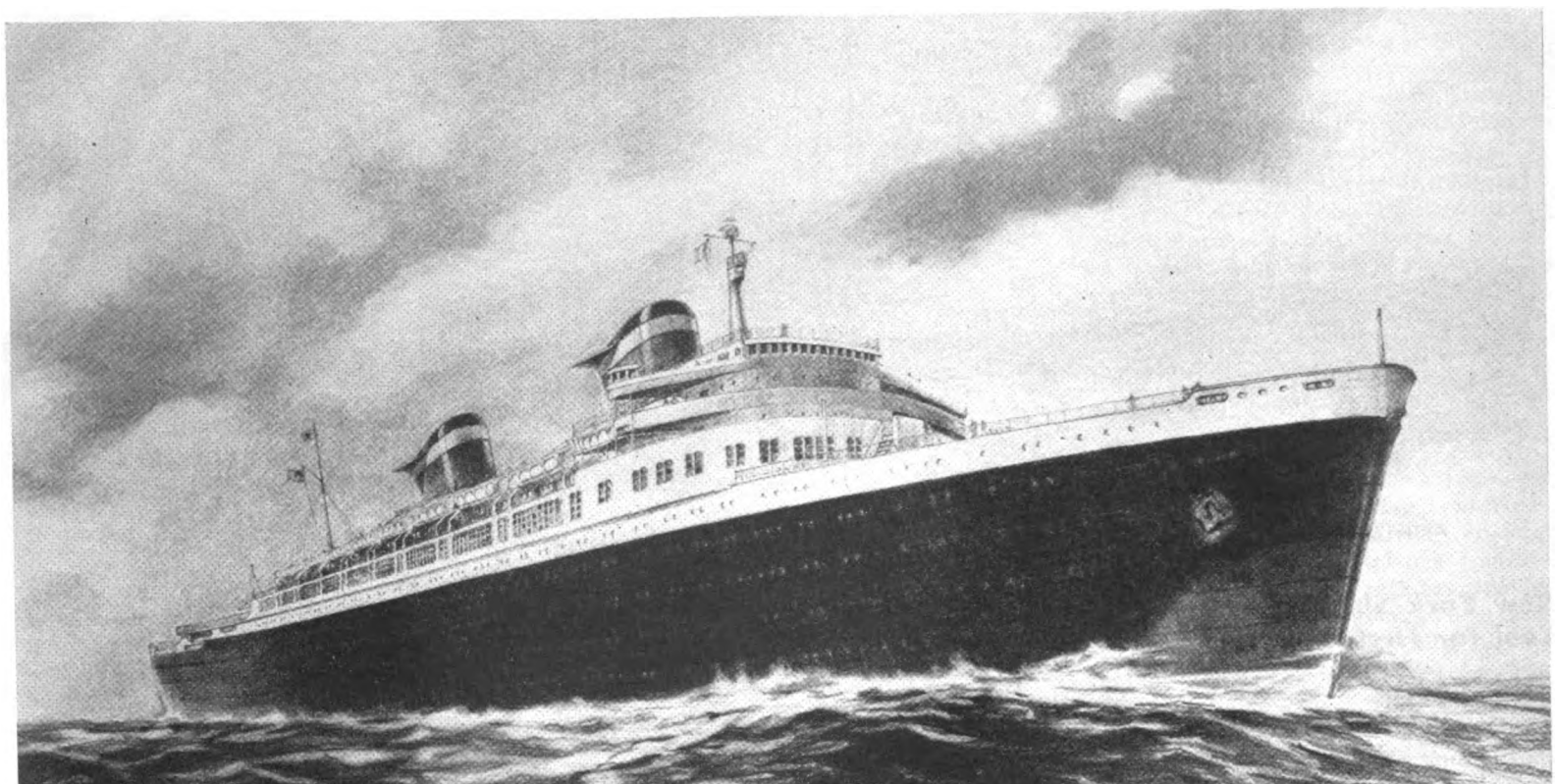
Heavy demand for the May issue has taken all reserves, prompting this request.

The LOG

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NEWPORT NEWS TO BUILD NEW U. S. SUPERLINER

United States Lines, Maritime Commission, and the Newport News Shipbuilding and Dry Dock Co. reach final agreement on construction costs.

Decision to build a $70,373,000 superliner for the North Atlantic service has been announced by the Maritime Commission.

The commission was notified of acceptance by the United States Lines of the terms tentatively agreed upon at an earlier conference between the Maritime Commission and the steamship company's officials.

The liner will be the largest ever to be built in the United States and the Newport News Shipbuilding & Dry Dock Company will build it. The vessel is estimated to take 1,218 days to complete. The design was begun three years ago by the naval architect firm of Gibbs & Cox. The new ship, as yet unnamed, will be 980 feet long, 101'6" in beam and 48,000 gross tons. It will be powered by Westinghouse steam turbines driving four screws. She will accommodate 2,000 passengers and require a crew of 1,000 men. Her top speed is not disclosed, but she will operate at a speed of 28 knots and more to meet a regular fortnightly sailing schedule from New York to the United Kingdom and the Continent.

The express liner will be air-conditioned throughout, will have double engine rooms and new light metal will be used extensively in her construction. Her plans reflect technical advancements of the past decade in ship designing.

Military Features

The vessel will be of great value to national defense. Those features credited to her military value include speed and certain structural details. She will be able to accommodate upwards of 12,000 troops. The new superliner will carry approximately the same number of passengers and maintain the same schedule as the larger liners in the North Atlantic run. She will be larger than the AMERICA, owned by the United States Lines, at present the largest vessel in the American merchant marine. The AMERICA, built at a cost of $17,000,000 in 1940, is 723 feet long and has a gross tonnage of 26,454. Her passenger capacity is 1200, and as a trooper had a capacity of 8,175 in World War II. The cruising speed of the AMERICA is 22 knots and her top speed is 24 knots.

The bids on the new superliner were opened by the Maritime Commission in Washington on December 1, 1948. Only three yards were believed to have facilities to build a ship of this size, and only two submitted bids. The Newport News Shipbuilding & Drydock Company, which built the AMERICA, submitted the low bid of $67,350,000. Additional costs of plans, specifications, supervision of construction, hotel-type equipment and interior decoration raised the total cost to $70,373,000. The other bid, in the amount of $75,649,000 was submitted by Bethlehem Steel Company, Shipbuilding Division, at Quincy, Massachusetts. Studies of plans, bids, national defense features and other details of the superliner were completed recently by the Maritime Commission following the receipt of the advisory report from

(Continued on Page 53)

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SAN FRANCISCO HOST CITY TO

NAVAL ARCHITECTS

West Coast is host to spring meeting of The Society of Naval Architects and Marine Engineers the first time in Society's history. Well attended by members from all sections of the country the conference is acclaimed successful.

First spring meeting of The Society of Naval Architects and Marine Engineers ever held west of the Mississippi, took place at San Francisco May 12 and 13, and was described by members from east, west, north and south as one of the best, if not the best, gathering of its kind in the fifty-six year life of the organization.

Approximately 250 members were registered for the meeting and this number was augmented by about another hundred guests at the annual spring banquet. Presiding officer was the president, John B. Woodward, president of the Newport News Shipbuilding and Dry Dock Co., Newport News, Virginia. When asked to give his impression of the San Francisco meeting, his reply was "Tops in every way—in attendance, in interest, in entertainment, in seriousness and sociability."

Technical papers given at the meeting are reproduced, condensed, in this issue of The LOG, together with pictures of the officers, speakers, discussors and many of the members and guests.

Speaker at the banquet was Dr. Lee A. DuBridge, president of the California Institute of Technology, Pasadena, California, whose title was "Science Goes to Sea," and who discussed the many aids and advantages mariners have gained from scientists, such as radio, Loran and radar.

During World War II Dr. DuBridge was in charge of the Radiation Laboratory at Massachusetts Institute of Technology, where Loran was invented and developed and where great advances were achieved in the development of radar.

"We have only begun to tap the full possibilities of the use of radio waves in marine navigation," Dr. DuBridge declared, "yet I do not need to recount to this audience what radio communication has done for the ship at sea. We simply could not imagine a modern navy or merchant marine operating without it.

"Now Loran offers, for the first time in history of navigation, the possibility of putting the stars out of business as the sole guide to the mariner. Already the principal sea lanes of the world are blanketed with a series of radio signals which a proper receiving set can convert almost instantly into a navigational 'fix,' day or night and in clear weather or foul."

Dr. DuBridge continued on into deeper science and discussed the possibility of nuclear energy eventually propelling ships.

"It is too early, to be sure, but there were some interesting possibilities," he said. "We do know that when one pound of Uranium is fully consumed by fission in a nuclear furnace, the amount of heat produced is equal to that produced by burning three million pounds of coal or oil. It would be pretty handy, wouldn't it, if a large ship could dispense with the necessity of starting out on a long voyage with 1,000 tons of oil in its tanks, and carry instead, about two-thirds of a pound of Uranium. The captain might even smuggle aboard 10 pounds in his suitcase and have enough fuel for six months of steady steaming.

"Yes, it's pretty fantastic. There must be a joker in it somewhere. As a matter of fact, there is a joker—in fact, several jokers. But in principle these things are possible. The jokers have to do with some engineering difficulties. These will no doubt be licked in time, but not right away."

Entertainment Features

The San Francisco Spring Meeting Committee, headed by George L. Crow, General Electric Co., saw to it that the members and guests had a very good time socially. In addition to the banquet there were shopping tours for the ladies, a trip through San Francisco's Chinatown, a bay tour on a Naval destroyer, a visit to the Radiation Laboratory at the University of California, golf and dinner at the Meadow Club in Marin County, and inspection of the San Francisco Naval Shipyard.

Particularly good was the entertainment at the banquet, arranged by Edward J. Schneider, Moore Dry Dock Co., chairman of the banquet and reception committee. The program included singing by a well-known group from San Francisco's Bohemian Club, composed of Charles F. Bulotti, Roy S. Folger, Austin W. Sperry, Marsden R. Argall and George Douglass.

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FIGHTING FIRE AT SEA

By Captain Harold J. Burke, U.S.N.R.*

It is a well-known fact that no single fire-extinguishing medium will control every type of fire. It appears logical, therefore, to examine the characteristics of each fire-extinguishing agent, to evaluate its effectiveness, and to understand the limitations of each. The most common agents are water, carbon dioxide, foam, dry powder, and steam.

Water. The best known extinguishing agent is water. Usually easy to obtain and inexpensive, it is most widely used. On many types of fire its use has been satisfactory and its ability to lower the temperature of a fire below the ignition point has long been recognized.

There are several disadvantages connected with its use. These may be listed as:

(a) It is productive of a large "run-off" which in a ship might create an unacceptable free surface condition with all the attendant effects on trim and stability.

(b) The water damage may far exceed the actual fire damage.

(c) It has a corrosive effect on fire mains and fittings.

(d) Pumping equipment of adequate capacity and pressure is required.

(e) In the form of a solid stream it has comparatively little heat-absorbing value because of the relatively small surface exposed to the fire.

Water Fog. The disadvantage listed in (e) led the United States Navy in the recent war to turn to the development of equipment that would discharge water in a finely diffused homogeneous mass.

The latent heat of vaporization of one pound of water at 212 degrees F is approximately 973 Btu. Thus, if every pound of water applied on a blaze were turned into steam by absorbing the heat of the fire, 973 Btu's would be removed from the

Abstracts from paper presented before The Society of Naval Architects and Marine Engineers' Spring Meeting, San Francisco, May 12, 1949.

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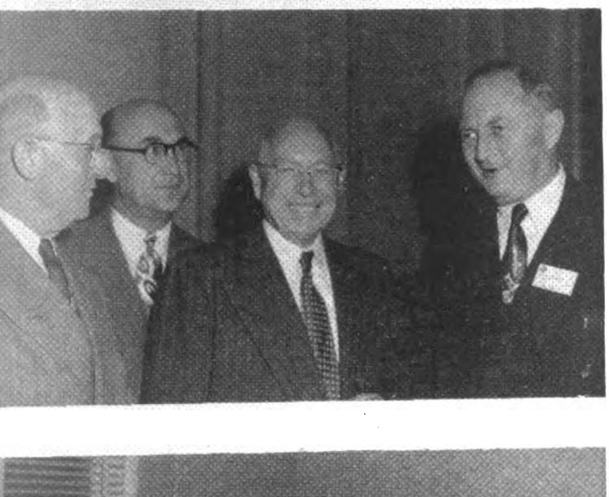




WILBUR N. LANDERS and JOHN B. WOODWARD, JR., secretary and president, respectively, of The Society of Naval Architects and Marine Engineers. Mr. Woodward is president and general manager of the Newport News Shipbuilding and Dry Dock Co.



HERBERT I. CHATTERTON, Everett Pacific Shipbuilding and Drydock Co., and HAROLD K. WEBB, United States Army Transport Corp.



Upper left: EVAN REINHART and C. R. HUICK, Johns-Manville Corp.

LEROY O. ARRINGDALE, J. S. Coffin, Jr. Co.; ERNIE JOHNSON, Robert G. Allen Pacific Co.; JOHN CORDES, Cordes Brothers; and JOHN S. CARSWELL, Cargocaire Engineering Corp.

JOHN W. HENDRY, Bethlehem Steel Corp.; ARLO WILSON, assistant secretary, The Society of Naval Architects and Marine Engineers; WILLIAM B. WARREN, American Bureau of Shipping.



JOHN B. MATTHEWS and PAUL L. JOSLYN, marine engineer and naval architect, respectively; SEWELL A. KNAPP, Moore Dry Dock Co.; JOHN SCOTT, formerly of Moore-Scott Co.; and M. PAUL HERSEY, Moore Dry Dock Co.

Lower left: LEIGH R. SANFORD, Shipbuilders Council of America.

WILLIAM RICHARDS, The Dampney Company of America.

NAVAL ARCHITECTS SPRIN

burning mass for every pound of water applied. However, because heat absorption is possible only through the surface area, it follows that a solid stream of water issuing from a 1-inch smooth-bore nozzle in the form of a solid stream will have, as a column, a theoretical surface area of slightly more than 37 square inches per lineal foot. If this same amount of water were finely diffused in the form of water fog, each minute particle would possess its individual surface area and the total area available for heat absorption therefore would be increased thousands of times, making it possible to approach more closely the optimum.

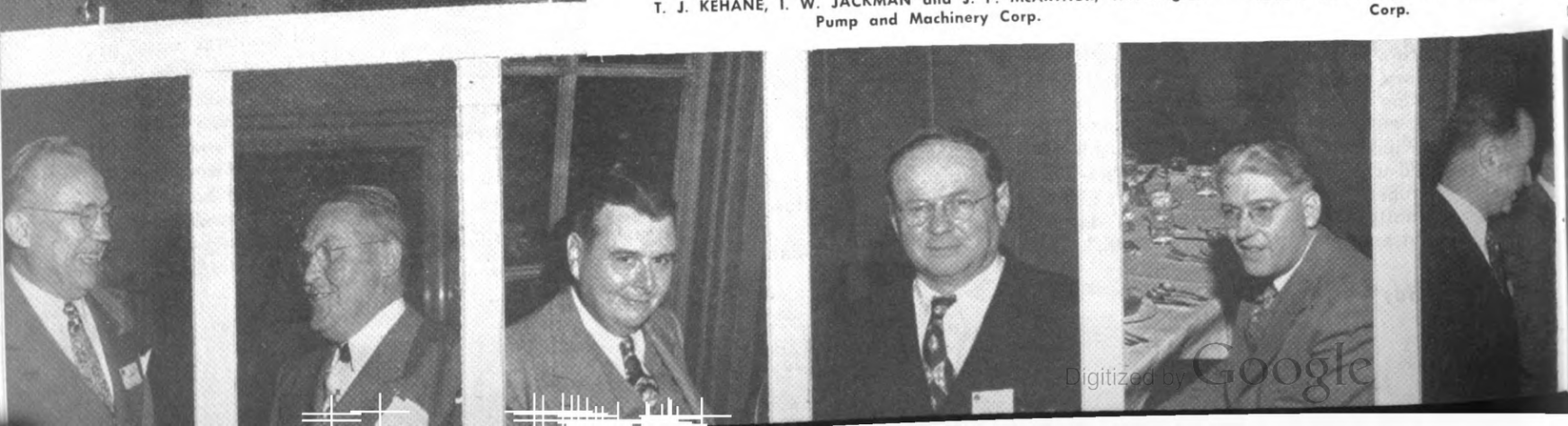
Wet Water. Water possesses an inherent surface tension which tends to limit both its surface spread and its ability to penetrate minute interstices in burning material, thus limiting its effectiveness. This surface tension causes water to bridge over pores in the texture of burning material and prevents penetration to a point where the heat of deep-seated fires can be absorbed.

Recently, wetting agents have been developed that will reduce the surface tension of water to a point where it will be comparable with that of kerosene. As a result, it is possible to obtain much greater penetration and wider surface spread. One-tenth of one per cent by volume of wetting agent mixed with ordinary water will produce an effective reduction of the surface tension.

"Wet water" for fire fighting may be

T. J. KEHANE, I. W. JACKMAN and J. P. McARTHUR, Worthington Pump and Machinery Corp.

ROBERT D. SPEAR, Foster Wheeler Corp.



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E. E. EYMAN, National Malleable and Steel Castings Co. and W. C. NICKUM, W. C. Nickum & Sons.



J. LEWIS LUCKENBACH, American Bureau of Shipping, and B. E. MEURK, Isthmian Steamship Co.



Upper right: GEORGE H. HILL, The Sharples Corporation; R. J. LAMONT, Todd Shipyards Corp. and L. STANLEY BAIER, L. S. Baier & Associates.



HOWARD P. BISH, General Electric Co.; LINN M. RAKESTRAW, Foster Wheeler Corp.; WILLIAM E. COLLEY, Kingsbury Machine Works; HAROLD C. HANSON, naval architect.

SPRING MEETING

available by premixing and storing for use. However, this is not a practical method for shipboard use. The use of proportioning devices which will feed the concentrate into the water stream in correct amounts is the best method to use afloat.

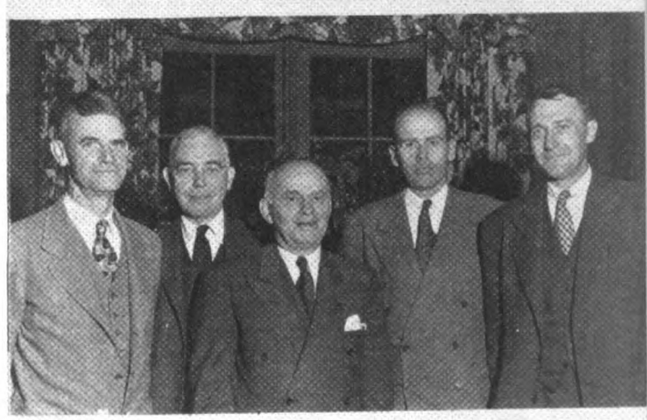
The general use of wet water in marine applications requires further study, research, and development. Its availability is mentioned here merely as food for thought, bearing in mind that definitely it will extinguish certain fires that plain water cannot control; for example, fires in baled cotton and in certain flammable liquids.

Carbon Dioxide. This is an excellent fire-extinguishing medium for many types of ship fires. It is discharged as a gas on the fire, and thus introduces no liquid into the vessel. It is non-corrosive and non-toxic. It will not damage even the most delicate material or machinery. It does not deteriorate, and may be stored for indefinite periods. As a non-conductor of electricity, it is safe to use around energized electrical equipment. As a gas, it can penetrate into voids and spaces in and around cargo in a manner not possible with other extinguishing media. It is probably the fastest acting extinguishing agent in common use. It is effective on Class A, B, or C fires; that is, fires generally classified as being of (A) carbonaceous matter, (B) flammable liquids, or (C) in electrical equipment.

It appears as though there is a certain



J. H. G. McCONECHY, Sun Shipbuilding and Dry Dock Co.; CAPTAIN WILBUR N. LANDERS, association secretary; COMMANDER FREDERICK A. HUNNEWELL.



WILLIAM E. BLEWETT, JR., Newport News Shipbuilding and Dry Dock Co.; J. H. KING, The Babcock & Wilcox Co.; GEORGE K. NICHOLS, Matson Navigation Co.; GEORGE H. HODGES, The Babcock & Wilcox Co., and WALTER B. HILL, C. C. Moore & Co., Engineers.

Lower right: JOHN W. STEWART, Sir Joseph W. Isherwood & Co., Ltd.

Lower, second from right: CHAS. H. JOHNSON, Combustion Engineering-Superheater, Inc.

H. W. OGILVIE, General Electric Co.



HENRY F. GELHAUS, Todd Shipyards Corp.



JOS. A. MOORE, JR., Moore Dry Dock Co.



JAMES FRANCISCO E. F. Drew & Co.







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amount of confusion regarding the use of carbon dioxide on shipboard. This, therefore, appears to be a good opportunity to clarify a statement recently published in a paper entitled "Modern Tankers" by Messrs. H. F. Robinson, J. F. Roeske, and A. S. Thaeler. In this excellent treatise the authors stated that carbon dioxide total flooding systems were removed from naval vessels because of the hazard to the ships' crews. The reason stated is slightly inaccurate and leaves an erroneous impression. These systems were removed from vessels wherein the air for combustion was taken from the space protected. Since carbon dioxide total flooding systems extinguish fire by diluting the oxygen content of the air to a point where combustion cannot be supported, it also results in inerting the air necessary for combustion in propulsion machinery thereby causing the ship to go dead in the water. The possibility of losing maneuverability of a vessel in time of action was a risk the United States Navy was unwilling to accept. This led to the replacement of total flooding systems with hose reel systems which would furnish adequate gas for local application.

Its great field of usefulness lies in hold protection. In the hold of a loaded ship the best equipped and best trained fire parties are helpless because of the impossibility of reaching the seat of the fire, unless, of course, it happens to occur immediately under the hatch. Built-in sprinklers would be ineffective because the cargo would shield a deep fire from the water until the hold was flooded to a height above the fire. Carbon dioxide gas, however, when discharged from a hold protection system of the total flooding type, will permeate throughout the hold and cargo, dilute the oxygen content of the air, and extinguish the fire completely unless the cargo has inherent oxygen characteristics.

Since this extinguishing agent is a nonconductor of electricity, it is of great value in the protection of electrical equipment, such as generators, motors and switchboards, causing no damage to such equipment.

Foam. Foam for fire fighting is obtainable in two forms—chemical or powder, and mechanical or liquid.

The chemical or powder type of foam generation requires the utilization of a foam generator. This is a mechanical mixing chamber, consisting of a base with inlet and outlet water connections and a venturi approximately midway between them. Directly over the venturi is a hopper into which the dehydrated chemical is poured. The suction created by the venturi draws the powder into the flowing water stream in the base. A chemical reaction takes place, in the course of which carbon dioxide gas is generated. Due to the high surface tension characteristics of the mixture, the gas generated is enveloped in a tough film forming tiny bubbles of foam-like appearance. The turbulence created in the hose line aids in mixing the chemical with the water. Expansion occurs as soon as the mixture









SPEAKERS AT NAVAL ARCHITECTS' MEETING: left to right, top: DR. LEE A. DuBRIDGE, California Institute of Technology; CAPTAIN HAROLD J. BURKE, USNR, C-O-Two Fire Equipment Co. Bottom: PROFESSOR LEONARD I. SCHIFF, Stanford University; ROBERT TATE, Matson Navigation Co.

is formed and the hose attached to the outlet side of the generator may be considered as part of the generating mechanism.

Mechanical or liquid foam is somewhat similar in appearance to chemical foam. However, it is not generated by chemical action, but by the mechanical entrainment of air and stabilizer into a solution with water. Foam stabilizer is fed into a water stream at the rate of 6 per cent by volume. Air entrainment and foam generation occur at the discharge nozzle. It should be noted that this proportion can be varied if the design of the mechanical equipment is modified accordingly but practically all gear of American manufacture used in connection with mechanical foam is intended for the 6 per cent proportion, which was the United States Navy standard established during the late war.

Mechanical foam is generally satisfactory for shipboard use, because it can be handled conveniently through piping and fittings suitable for water systems. The hose layout used with mechanical foam may be of any desired length. The only factor to consider is the friction loss, which for practical purposes can be considered the same as that of water. In order to produce foam, four conditions must be satisfied:

(1) There must be water (fresh or salt are equally satisfactory).

(2) There must be a liquid foam stabilizer.

(3) There must be air.

(4) The foregoing must be in the proper proportion and intimately mixed.

Introduction of the liquid stabilizer into the water is a function of the proportioning device or is accomplished through pre-mixing. The addition of the air and generation of foam are accomplished by the nozzle. The mechanical foam nozzle is designed with an aerating chamber, which entrains the air. The liquid mixture of water and stabilizer passes through the nozzle in the form of small impinging streams which converge just beyond the mouth of the tailpiece of the nozzle. The tailpiece is furnished to conform the stream for the purpose of range and also to provide a mixing chamber for the liquid and air.

Dry Chemical. A relatively new development in the field of fire-extinguishing devices is the dry chemical fire extinguisher. This consists of a steel cylinder containing a specially processed chemical in powdered form and an expellent, usually carbon dioxide, compressed in a separate cartridge, which, when ruptured, releases the gas pressure necessary to discharge the powdered chemical from the cylinder through a hose attachment. These extinguishers usually have greater range and afford a better shield to protect the operator from radiated heat. The powdered chemical may be bicarbonate of soda or a similar chemical processed with certain powdered lubricants to provide free flowing

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characteristics. While these extinguishers have been found generally acceptable for shore use, little if any experience has been had aboard vessels of American registry. The Germans have been using them aboard ship for some time and with reported good results.

Pumps

Proper pumping capacity for fire-fighting purposes aboard a ship should be one of the primary concerns of the naval architect. Generally speaking, reflection upon the problem will indicate that the pumping capacity of most of our ships is too low in volume and pressure. The production of a good water fog pattern requires a nozzle pressure of about 60 to 100 pounds per square inch. Friction loss through piping and hose in addition to the static head have to be overcome. Hence it is evident that fire pumps have to be pretty substantial. Furthermore, the capacity of these pumps should be adequate to provide for about six streams at about 150 gallons per minute each on deck level simultaneously and in addition thereto provide sufficient water for any other water needed for fire protection-equipment.

In addition to the ship's regular fire pumps, every vessel should be equipped with a separate Deisel-driven fire pump capable of furnishing at least 1,000 gallons of water a minute at a pressure of 125 pounds per square inch. This pump, for emergency purposes only, should be located as far forward as possible and should have its own sea chest. An independent vertical fire main riser with a manifold of six 2½-inch hose valves on each deck level should be installed for this pump. The necessity for furnishing such an independent fire pump lies in the fact that, during a fire, vital engineering spaces may become involved in the actual fire, or conditions may force the crew to abandon them, and thus prevent the proper operation of auxiliaries such as fire pumps. The fact that some vessels may have emergency Diesel generators and electrically driven fire pumps does not alter the desirability for the independent Diesel-driven fire pump, since all of the machinery spaces, including the auxiliary flats, may become untenable during a fire.

As the extreme bow of a ship is usually tenable during a fire, it is to this point that crew members and passengers are often driven during a fire and it therefore follows that the bow of a ship affords a reasonable base for fire-fighting operations if all other designed protection is useless.

Next to the bow location, the extreme stern is probably the safest point on a ship during a fire, particularly if the vessel retains any maneuverability.

The item of proper fire pumps for a ship is of utmost importance. A reasonable factor of safety should be calculated and included in the specification, bearing in mind that time will cause deterioration in fire mains and piping and that this in turn will result in increased friction loss.

Training

One of the paramount considerations of successful fire fighting is to instill in personnel confidence in their fire-fighting equipment and confidence in their ability to use that equipment successfully. This is a basic function of training. Americans are basically intelligent people. They learn with amazing rapidity and when a problem is presented to them in the proper light and with the proper training aids or demonstrations they grasp the point completely.

Actually, the successful handling of a fire stems from good training, discipline, and an elementary knowledge of the chemistry of fire.

Conclusion

If this paper will increase the fire consciousness of naval architects, marine engineers, and ship operators, it will be well worth the effort taken to prepare it. It must be borne in mind that the entire subject of fire prevention and fire protection for ships is so broad and complex that it cannot be covered thoroughly in this paper. However, an effort has been made to highlight the important features that should be taken into consideration if our ships are to sail the seas comparatively safe from fire.

⚓ ⚓ ⚓

RECONVERSION OF LINER SS LURLINE

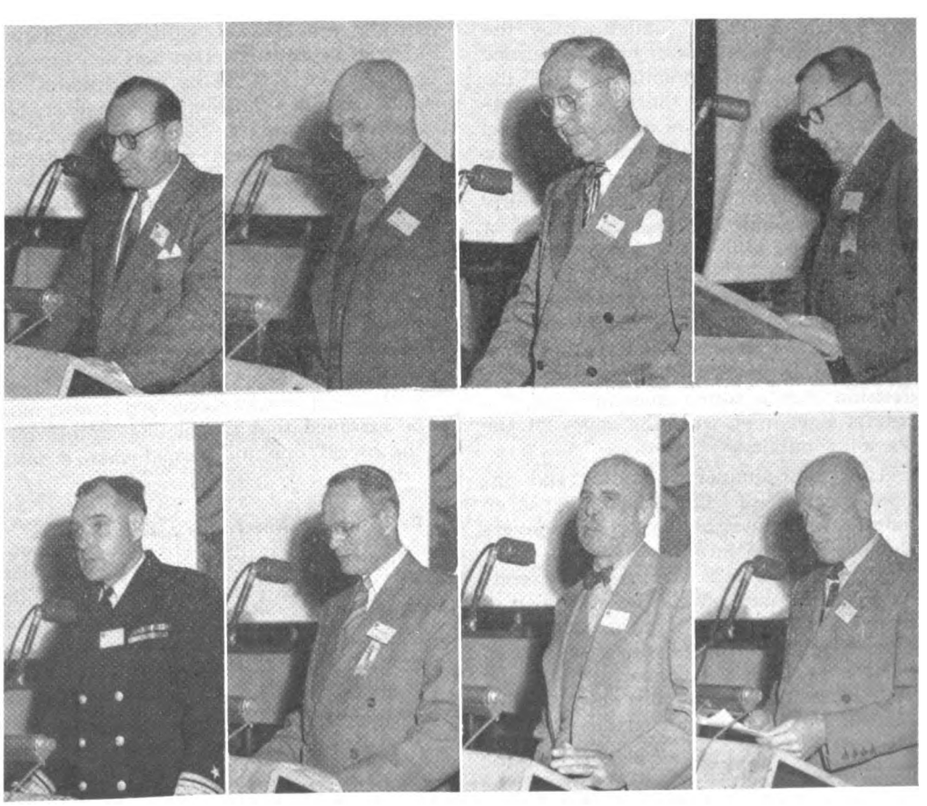
By ROBERT TATE
Assistant to Vice President,
Matson Navigation Company

The term "reconversion" in the strict interpretation has come to be applied to the general overhaul, repair, and refitting of a vessel after war-time service so as to place it in its original peace-time condition with all the war damage and war changes eliminated. However, in many cases, and particularly with large passenger vessels, it was neither possible, desirable, nor permissible that the vessel be refitted in its original form. A number of factors combined in most cases to dictate exactly what course the refitting of these vessels would take, and each "reconversion" in its final form developed its own individual characteristics.

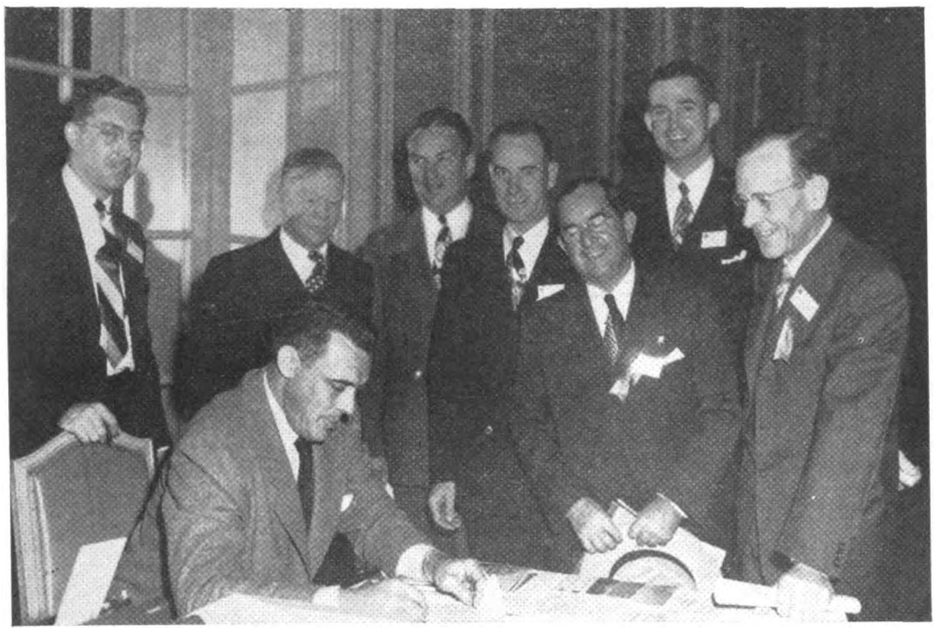
This, then, was the decision which faced

Abstracts from paper presented before The Society of Naval Architects and Marine Engineers' Spring Meeting, San Francisco, May 12, 1949.

DISCUSSORS OF PAPERS: left to right, top: PHILIP LEMLER, Todd Shipyards Corp.; VICE ADMIRAL E. L. COCHRANE, USN (ret.), Massachusetts Institute of Technology; JOHN F. KOOISTRA, Carrier Corporation; LAWRENCE DAKE, Cargocaire Engineering Corp. Bottom: REAR ADMIRAL CHARLES D. WHEELOCK, USN, Bureau of Ships; MORRIS WEITZNER, Bethlehem Steel Co.; REAR ADMIRAL FRANK D. HIGBEE, USCG (ret.), Port of Los Angeles; WILLIAM F. HORN, Sperry Gyroscope Co.



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THE SAN FRANCISCO COMMITTEE—Seated: CHARLES G. COX, Nordberg Manufacturing Co.; standing, left to right: FRED W. SHORT, Todd Shipyards Corp.; THOS A. SHORT, Thos. A. Short Co.; GEORGE CROW, Chairman of the Committee, General Electric Co.; L. L. WHITE, Coastwide Painters; C. EDGAR MARTIN, Amercoat; EDWARD J. SCHNEIDER, Moore Dry Dock Co., and WILLIAM B. WARREN, American Bureau of Shipping.

the LURLINE'S owners at the end of the war: Should this vessel be operated with minor repairs, and refurbishing, and installation of such fire control and other measures as would make her temporarily acceptable to the governing bodies and public, with the prospect of replacement by a new vessel at greater cost at much later date; or was it possible to modernize her completely in a relatively short period, fireproof her, and place her mechanically in a condition in which the owners could expect her to operate for a period comparable to the length of life of a new vessel. The decision, influenced by the desire to offer the best of modern service to the Hawaiian community and the American traveler in the shortest possible time, was in favor of the latter course. Admittedly the cost, affected partly by a sharply rising trend of prices in industry and partly by engineering operating difficulties encountered, was in excess of original expectations. Time also was more than expected. However, both cost and time were markedly under those required for construction of a new vessel, and the LURLINE'S first year of operation, now completed, gives every indication that the decision was a sound one and that the results have met with the favor of the traveling public.

After a preliminary planning and design period of approximately seven months, the physical work of reconversion was started in June, 1946, and completed during the 22 months' period ending April 15, 1948. With the exception of final dry-docking, all shipyard work, including plan development, was carried out by the United Engineering Company of Alameda, Cal., a subsidiary of the Matson Navigation Company.

Generally speaking, the work on the main hull structure, the erection of the new deck houses and enclosure of promenade and well deck areas presented no problems uncommon to any ship repair project. It might be mentioned in passing, however, that the erection of the aluminum sun deck house, 96 feet long and 43 feet wide, in the most exposed possible location subject to extreme thermal changes and rigidly attached to an existing steel structure presented some cause for concern. The aluminum plating was riveted to a steel bar which in turn was welded to the existing steel structure below. All joints between aluminum and steel were packed with an insulating mastic to prevent action between the dissimilar metals. Taking into account the difference in coefficient of expansion between aluminum and steel and assuming that under tropical sunlight the metal surface would reach a temperature of 140 degrees as against the 70-degree temperature averaged in the shipyard, the aluminum plating would expand, if free, 0.475 inch more in the length of the house than would the steel. Service experience has proved so far, however, that, although there is some visible distortion with changes in temperature, there have been no leaks or cracks developed, and it must be assumed that the plating is absorbing the stress due to thermal change satisfactorily.

Propulsion Machinery Auxiliaries

The LURLINE'S main propulsion plant consists of two triple-expansion Bethlehem turbines of 11,000 shaft horsepower each, driving shafts through single-reduction Falk gears and receiving steam from 12 Babcock and Wilcox watertube boilers designed for 400 pounds per square inch gage and 675 degrees F total temperature. The boilers are fitted with interdeck superheaters and with air heaters but without economizers. A closed stokehold system of firing is employed. In 1933, these operating pressures and temperatures were considered high, although developments since that date tend to make them appear low in comparison with present installations. The outstanding performance record and reliability of this installation during its operating life had been such as to convince the owners that no attempt to modernize the plant further simply in the interest of fuel efficiency would be economically desirable. It was decided therefore to limit reconversion work on the main unit to that required to restore the machinery to its original strength, cleanliness and integrity of performance, and to compensate for additional auxiliary loads.

The main turbines exhibited notable erosion of the casing material alongside the roots of the blading; i. e., in way of the blade tips of the rotating member. On the LURLINE this erosion was not as severe as on the two sister vessels, on which it was decided later to renew the intermediate-pressure casings entirely. This erosion became pronounced at about midlength of the intermediate-pressure turbine and increased in severity through the last stages of the intermediate-pressures and into the first few stages of the low-pressures where it then dropped off in relative intensity. On the MARIPOSA and the MONTEREY this erosion reached a maximum of as much as ¼ inch in localized areas. As the depth of the blade roots was ⅜ inch and as the serrations of the roots were exposed in some areas, the resultant reduction in blade support strength on these turbines can be appreciated. It is emphasized again that this maximum condition was not found on the LURLINE. Since the other two vessels had operated throughout a long period of the war as convoys at reduced speed, a practice to which the LURLINE was not subjected, and since the greater degree of erosion was considerably more than could be attributed to the slightly greater age of the vessels, it must be concluded that a principal contributing factor in this condition was the greater condensation experienced in the latter stages of expansion while operating for protracted periods at reduced power. Since both intermediate-pressure and low-pressure casings were of cast iron, no possibility existed for building up eroded areas through welding; however, sufficient thickness of material was available in the low-pressures to permit reboring to new dimensions and then reblading with slightly longer blades to compensate.

Since pronounced erosion started directly after the bleeder belt in the intermediate-pressure turbines, it was thought possible that some condensate might be accumulating, particularly at lower speeds, at this point. Also, except in the rare instances when the engines were operating at full power or very close to it, the pressure at this bleeder belt was insufficient to permit fully effective use of bleeder steam for feed heating or for evaporators. In view of these factors, the bleeder point was moved three stages

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forward to the intermediate-pressure receiver, thereby assuring adequate pressure for steady steam supply to the new evaporator plant plus adequate feed heating, but accepting a slight loss in main plant efficiency. In the case of the sister vessels for which new intermediate-pressure casings were to be constructed, the old bleeder belt was eliminated in its entirety, while on the LURLINE, where it was decided to reuse the old casings, it was necessary to leave the bleeder belt intact, simply blanking off the outlet flange.

The net result of the repairs and changes (moving bleeder point, increased bleeder consumption, increase in low-pressure blade size) to the main turbines has been a marked decrease in proportionate load carried in the intermediate-pressure and low-pressure turbines as follows:

	Original	After reconversion[a]
High-pressure turbines	33 1/3 per cent	48 per cent
Intermediate-pressure turbines	33 1/3 per cent	28 per cent
Low-Pressure turbines	33 1/3 per cent	24 per cent

[a] Maximum condition: 2 evaporated overload orifices.

Results during trials and in service indicate that this redistribution of load has produced no unsatisfactory results or unforeseen complications.

Passenger Accommodations

Although the total passenger capacity of the LURLINE after reconversion was somewhat increased from the original design, the total area assigned to staterooms, public rooms, and promenades was actually decreased; and the unit area per passenger in each category was also decreased. In spite of this the maximum occupancy in first class rooms remained at two per room, and the cabin class maximum occupancy was reduced from four to three. All first class staterooms were fitted with private bath facilities as opposed to the prewar basis of some private and some community baths. Finally, the effective usable area of the average room was substantially increased. This was accomplished solely through the medium of more effective and efficient utilization of space, by designing every square inch of area to some useful function, and in some cases using certain areas for more than one function. The amount of apparent usable stateroom space per occupant in many instances was increased with an actual decrease in measured deck area.

The two major developments chiefly responsible for this improvement in passenger staterooms were, first, air conditioning of all quarters and, second, the extensive use of convertible furniture.

Crew Accommodations

As stated previously, the crew and officer complement required to operate the LURLINE had increased from an original 358 to a total of 433 under current agreements. In addition to this increase in numbers there have been increases in requirements for space and equipment per man. Whereas in the original vessel the lower ratings were quartered in large open forecastles numbering up to a maximum of 40 men in a single space, present custom required that in no case should more than six men be quartered in any one room. The number of six-man rooms was limited, and for the majority of cases four men per room was considered standard.

Conclusions

In the foregoing sections the author has endeavored to describe the principal features of the physical reconversion of the LURLINE, to interrelate the various parts in their effect on each other, and to point out the influencing factors in

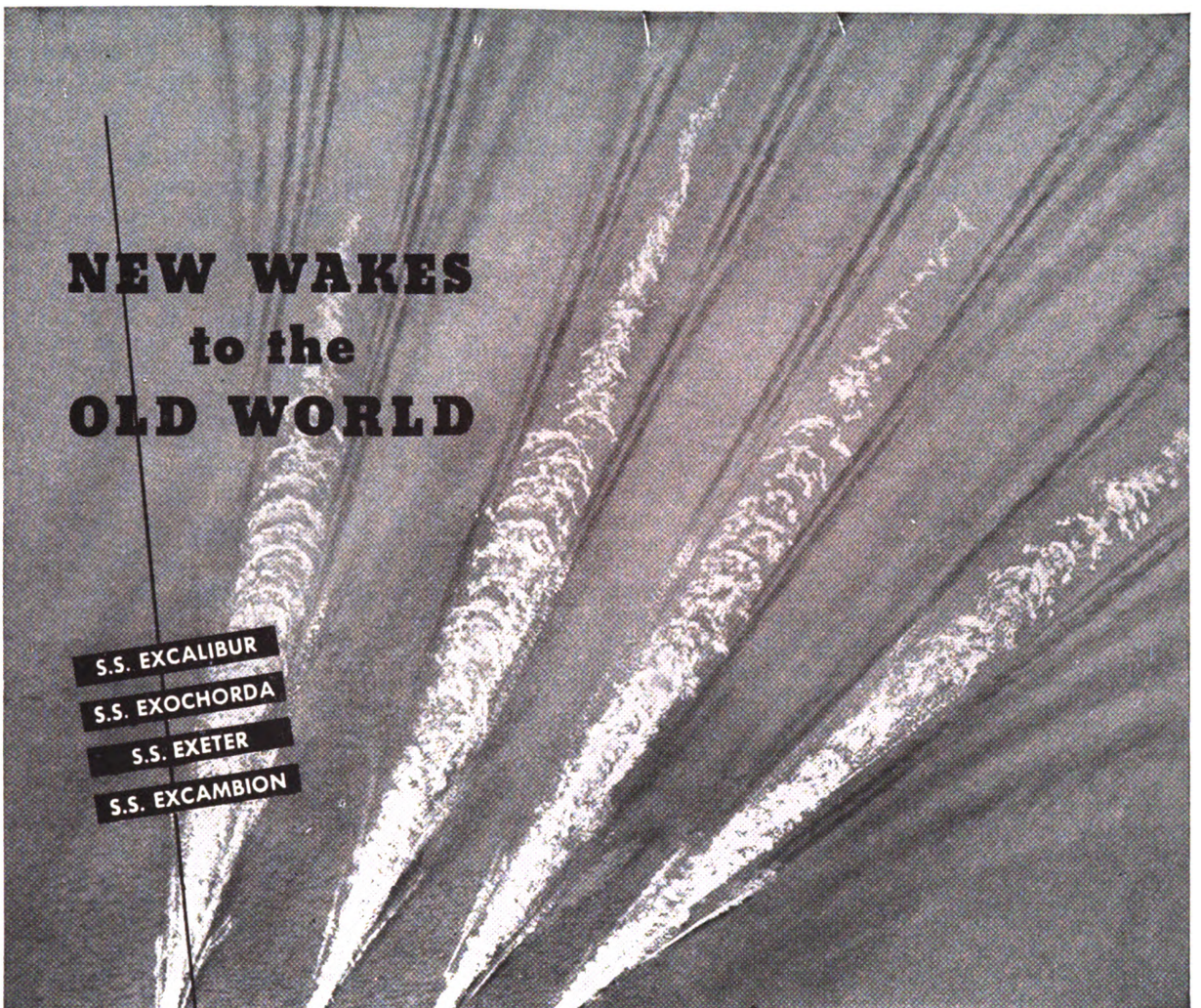
(Continued on Page 47)

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WASHINGTON Reporting

By The LOG's Own Correspondents

Long Range Legislation

Chairman S. O. Bland, House Merchant Marine and Fisheries Committee, issued a final appeal to various shipowner groups in the industry to compromise their differences and to cooperate together with the U. S. Maritime Commission so that a program can be jointly presented to Congress.

Maritime Commission Vice Chairman Grenville Mellen immediately started conferences between representatives of National Federation of American Shipping, Association of American Shipowners and several individual steamship companies. He expressed confidence that all interests would be able to cooperate together so that industry and government can present a united program to Congress.

Chairman Bland, in a letter to Mr. Mellen, Frazer A. Bailey and George Morgan, declared:

"The subsidized lines must realize that those who choose to operate without benefit of an operating subsidy should not be deprived of other benefits of our merchant marine law, such as the construction subsidy and equal tax treatment. On the other hand, unsubsidized lines must recognize that the acceptance of an operating subsidy by its very nature automatically subjects the beneficiary to various limitations upon the free scope of operation, and that the payment of an operating subsidy is not a gift or a gratuity, but an attempt to equalize the operating costs between the American operator and his foreign competitor, in consideration of which the subsidized lines voluntarily yield a degree of freedom of action retained by the unsubsidized lines. We must all recognize that neither group by itself is adequate to the needs of the country, and that there should be no discrimination between the groups."

In closing the two-page letter, Chairman Bland stated:

"It will be a matter of great personal gratification to me if the sincere efforts of all concerned result in the enactment of perfecting amendments which make the 1936 Act the foundation for long-range growth and development of the merchant marine—consisting of both unsubsidized and subsidized lines, each group taking a fair and sympathetic view of the problems of the other."

Privately Chairman Bland is reported to have told various Washington officials, in view of his retirement after this term of office, of his deep desire to see the merchant marine on a sound, stable basis with the government promulgating a wise and long-range continuous shipping policy.

Unions Overplay Hand

Hearings on H. R. 3291, a union-sponsored bill which proposed to unconditionally prohibit the sale or transfer of American ships to aliens and aimed directly at returning American owned vessels under Panamanian or other foreign registry, to American registry, were abruptly cut off by Representative Hart of New Jersey, chairman of a sub-committee holding the hearings.

The almost dramatic end of the hearings came after the shipping industry, including the Great Lakes Carriers, State, Treasury and Maritime Commission in a majority report opposed the proposed legislation.

According to Washington observers Representative Hart's decision to end the hearings came after two aliens, William Dorshain of Belgium, representing the International Transport Workers Federation, and Nicolas Kalondis, a Greek citizen, representing the Federation of Greek Maritime Unions, appeared to testify. Mr. Kalondis was permitted to read a statement, but Representative Hart flatly refused to receive testimony from Mr. Dorshain.

"We are not interested in the views of foreigners, no matter how highly they may be regarded," Representative Hart declared, in cutting short the testimony of the two non-citizens. In this respect, and also due to the inflexibility of the bill, some members of the committee felt that the maritime unions had "overplayed their hand."

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Shipping Opposes ICC Proposal

American shipowner associations are opposed to H. R. 1710 and S. 256 which would authorize I.C.C. to require annual, periodical or specific reports from associations or organizations maintained by or in the interest of any group of water carriers.

According to officials here the proposed amendments to the Interstate Commerce Act were recommended by the I.C.C. Shipping contends that while I.C.C. is primarily interested in obtaining information from associations engaging in activities relating to the fixing of rates, or the publication of tariffs, schedules or practices, none of the present principal American shipowners groups engage in such activities.

According to testimony presented by NFAS Legal Counsel A. U. Krebs "the Federation and its member associations (AMMI, PAASA and SOAOPC) do not possess any information which would be of value to the I.C.C. in the discharge of its functions and duties under Part III of the Act. Furthermore, information of this nature is being furnished to the Commission by the member companies of the associations in the reports they already file with I.C.C."

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World Maritime Fleets Increase

Information compiled by U. S. Maritime Commission shows the future merchant fleets of the world will be at least 10% larger than prior to World War II, with notable increases in nations which possessed hardly any shipping in 1939.

Total tonnage of the world when present construction and ships on order are completed (excluding the U. S. Reserve Fleet) will be nearly 90,000,000 dwt.

As 1949 started nearly 12 million dwt. was on order or being built. The Marshall Plan countries accounted for 70% of the amount, the U. S. about 12%.

Nations showing increases are Canada, Panama, Portugal, Sweden, Turkey, Denmark, U.S.S.R., Spain, Norway, Belgium, Netherlands and the United Kingdom. Other countries coming to the fore in shipping were noted as China, Honduras, Brazil, Argentina, Poland, and Mexico.

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Dollar Appeals Court Ruling

R. Stanley Dollar and Dollar Steamship Line interests have filed notice of appeal here in Federal District Court from that Court's decision of last December. At that time the Court held that stock transferred by the Dollar Line to the U. S. Maritime Commission was a transfer "outright and one of title." Dollar interests contended the stock transaction was only a pledge and debts of the line having been satisfied since the pledge the stock should be released.

Previous to the December decision, the Dollar interests had their case dismissed by the District Court but appealed to the U. S. Court of Appeals who reversed the District Court and remanded the case for trial in the District Court on its merits. The U. S. Supreme Court affirmed the Appeals Court ruling.

It is expected that the Appeals Court will hear Dollar's argument during the coming fall term. Attorneys for the Dollar interests are Gregory Harrison and Moses Lasky of San Francisco and Clinton M. Hester and M. M. Kearney of Washington, D. C.

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Bernstein Passenger Service

Officials here, basing their opinions on U. S. Maritime Commission's declaration of inadequate service on the Antwerp-Rotterdam passenger route, conceded that it appeared as though the Arnold Bernstein Line would get a subsidy contract for providing a sister ship service on that route.

The line has already selected two former Army transports, the P-2 GENERAL

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WASHINGTON Report

JOHN POPE and GENERAL WILLIAM WEIGEL which would be converted at a total of nearly $10,000,000 to provide a low-cost one-class trans-Atlantic passenger service.

Each vessel would accommodate about 750 passengers, and there is some speculation that such features as cafeteria service, Pullman type two-person cabins and restricted menus will enable fares as low as $300 round trip.

Also heard here in connection with the two vessels is strong support from the maritime unions who, despite the fact that steward's departments on the ships may be kept at a minimum, are exerting terrific pressure to have the Maritime Commission give prompt approval so the ships could enter service next April or May. Approximately 1100 jobs would be created if the two ships go into U. S. flag service.

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Fleming USMC Chairman

The appointment by President Truman of Federal Works Administrator Major General Philip Bracken Fleming to the chairmanship of the Maritime Commission was greeted with mixed feelings here.

The maritime unions privately voiced their distaste of "another military man" on the Commission, but publicly approved the appointment. The Commission itself was publicly silent, although several Commissioners let it be known they welcomed a chairman who was a close personal confidant of the President and had open access to the White House.

The industry wired General Fleming as follows:

"As President of the National Federation of American Shipping, representing a preponderance of American-flag overseas, coastwise and intercoastal steamship lines, I wish to express to you our sincere congratulations on your appointment as chairman of the U. S. Maritime Commission. Please be assured further of our earnest desire to cooperate with you fully in continuance of a realistic and practical program that will result in the building up of a sound and efficient American Merchant Marine as a vital factor in our national economy and our security as a nation. Frazer A. Bailey."

Shortly after the President disclosed General Fleming's appointment, Washington newspaper reporters were told by General Fleming's press representatives to examine the Hoover Task Force Report, Page 61, Appendix N. This, in brief, infers the lack of leadership and particularly the lack of authority of a Maritime Commission chairman based upon close White House support. It is therefore evident that General Fleming will become chairman with a maximum of cooperation from the President.

General Fleming is known in Government circles, having served the Administration since 1933 when President Roosevelt appointed him as Deputy Administrator of PWA, as a "trouble shooter." He graduated from West Point at the head of his class in 1911, had extensive service with the Corps of Engineers and became Chief of Finance Division in the office of Chief of Engineers. In 1939 he became Administrator of Wage and Hour Division of the Department of Labor, later becoming FWA Administrator in late '41.

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Merchant Marine Investigation

Washington's long summer months probably will see an extensive investigation into the problems of the Merchant Marine under a Senate Bill, S. 50, to be in charge of a Merchant Marine Subcommittee Chairman, Senator Warren Magnuson, as part of the overall transportation investigation by the Senate Interstate and Foreign Commerce Committee.

Senator Edwin C. Johnson of Colorado, overall committee chairman, has already let it be known that his committee does not intend to have a "witch hunt," or will it seek headlines or publicity. He has said the entire objective with transportation will be to "be helpfully constructive." At the same time he warned that evil will be exposed wherever found.

Some idea of what form the investigation will take with respect to the Merchant Marine appears to be foreshadowed by the following questions Senator Johnson recently posed before the Chamber of Commerce of the United States, as follows:

"How much tonnage do we need in peacetime to carry our share of the world's commerce? What is the minimum tonnage required in the event of an emergency? What portion of this insurance should the taxpayers bear? How much of the load will private enterprise assume? How much cargo which should move in private bottoms is the Army Transport Service carrying on Government-owned ships? What is the effect of the transfers to Panamanian, Honduran and other flags on our Merchant Marine? What is the impact of coastwise and intercoastal movement of cargoes upon our various forms of domestic land transportation?"

Senator Johnson has also let it be known, by inference at least, that the functions of the U. S. Maritime Commission are not only regulatory, but promotional and the present lack of a definite promotional campaign by USMC will probably be brought into the investigation.

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Heard in Washington

Edward Jelsma, former Navy supply officer during the war and later assistant fiscal director in Navy Department, has been appointed professional staff member on maritime legislation of Senate Committee on Interstate and Foreign Commerce, replacing Dick Lunn . . . The USMC may receive an appropriation for a maritime exhibit at next year's Washington Sesqui-Centennial . . . Navy Department has found merit in both NFAS and AASO legislative programs, but prefers the NFAS program.

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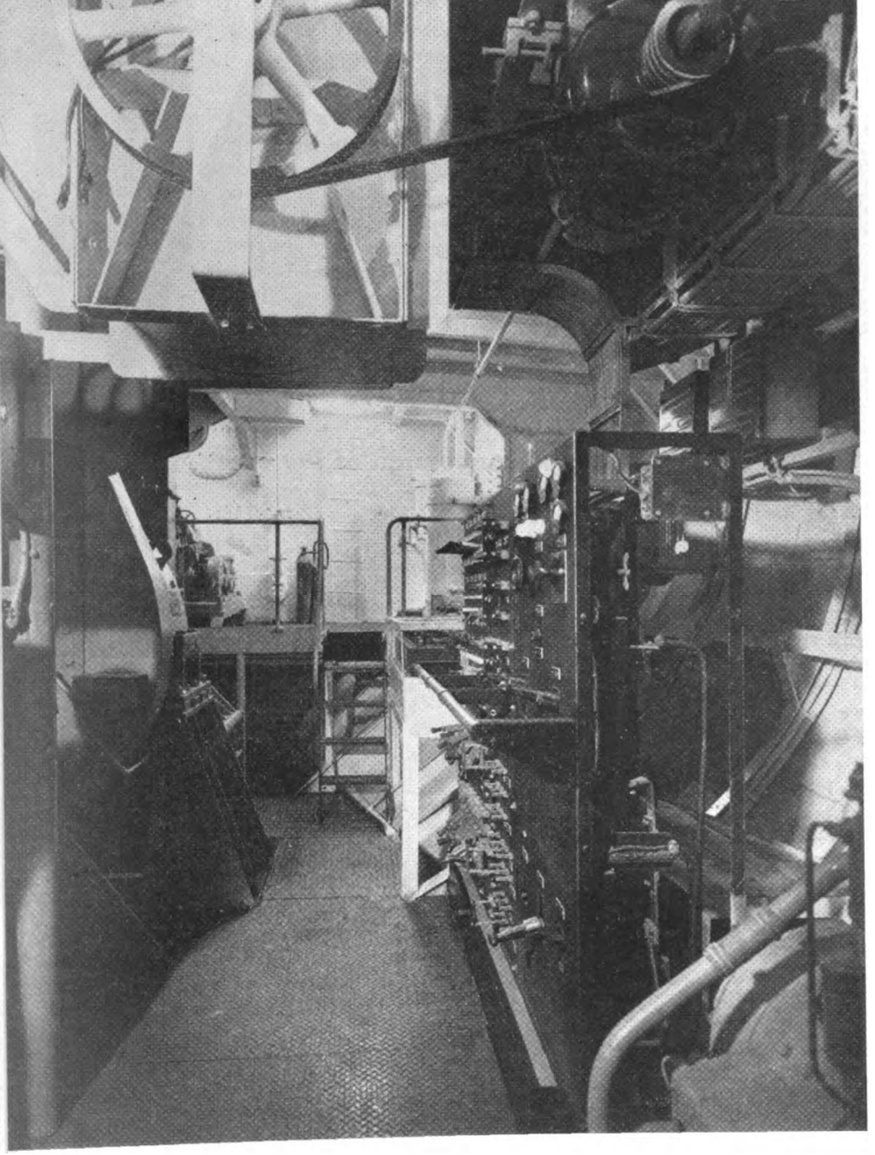
Reconversion of the SS LURLINE

(Continued from Page 44)

trade and travel customs and in the laws and rules of governing bodies which influenced the ultimate design and which resulted in a vessel of radically different characteristics from those originally built into the same hull 15½ years before. It often has been noted that one cannot stop with just one single change in a ship's design, and this is particularly true of large passenger vessels in which the entire design represents a closely interrelated group of components, each weighted and balanced—and compromised—in accordance with the demands of a thousand others. The naval architect becomes used to dealing with his problems of today, which will be the ships of tomorrow, and only when he indulges in retrospect does he realize the profound influence of the "little changes" which have been established through law or custom but which, cumulatively, affect nearly every aspect of ship design. Even then, he must compare one ship, built 10, 15, or 20 years ago with another, building or projected, which may have entirely different dimensions, capacities, speeds, or other characteristics, or which may be intended for an entirely different trade route. But in the LURLINE reconversion all these latter characteristics may be considered as constants, and it is possible to see more clearly the impact of each factor as it influences the whole design.

It is impossible, of course, to predict with positive assurance the future of seagoing surface transportation many years hence. Like the broader aspects of the current dispute between the proponents of seapower and airpower on a military level, it may only be surmised that the ultimate result will be in the nature of a compromise in which each will find its own field and in which, in the long run, both may be required in greater numbers than presently contemplated. It can be said, however, as a result of the completion of the LURLINE'S reconversion and the lessons of her first year of operation, that there is no indication that surface transportation is about to pass out of the picture. The LURLINE has been enthusiastically received by the traveling public, and there is every indication that, when safe, comfortable modern passenger ship travel is offered at reasonable prices, public confidence and support will continue.

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POWER plant for the new GRACE MORAN consists of General Motors Diesel Electric drive Model No. 16-278A with 16 cylinders turning up 1750 h.p. at 750 RPM's. Tug was built by the Levingston Shipbuilding Corp., Orange, Texas, and was the 441st vessel built in the yard. When the fifth one is delivered Levingston will have built a total of 18 tugs now in the Moran fleet.

MORAN GETS FIRST OF FIVE NEW HARBOR TUGS

The GRACE MORAN, most powerful and modern harbor tugboat in New York harbor, was greeted by a flotilla of tugs and fireboats upon her arrival in New York after a 6½-day trip under her own power from Orange, Texas, where she was built.

Described by George W. Codrington, vice-president of General Motors and general manager of the corporation's Cleveland Diesel Engine Division, as "the finest harbor tug ever built," the GRACE MORAN is the first of five sister tugboats to be delivered to the Moran Towing and Transportation Company, making the fleet of that company, the largest in the world, practically 100% Diesel-electric.

The new tugboats will replace older steam tugs and will be used in docking the QUEEN ELIZABETH and other giant trans-Atlantic liners. They are powered by 16-cylinder, 2-cycle General Motors Diesel engines and 1200 kw generators, were designed by Tams, Inc., of New York and built at the Levingston Shipbuilding Corporation at Orange, Texas.

The GRACE MORAN, first of the five new additions to the Moran fleet, ran trials on April 11. During the trials in the Sabine River a run was given over the measured mile, and a speed of 15.00 knots was recorded, a good record for a boat of her displacement.

It was attained with the propellor turning at 200 rpm, and with the hull virtually free from vibration. At no time on the run was there any trace of exhaust smoke. The main engine speed was 750 rpm, and the exhaust temperature 600 degrees F on the fastest run of the trial.

When she was under construction at Orange, William L. Ulcher, chief engineer of the yard, supervised the details and J. F. Belford, operating manager for Moran, whose ideas were incorporated into the design, supervised for the company.

Because the GRACE MORAN is a day service craft, the sleeping accommodation has been simplified and consists of two twin-berthed cabins only. It was, therefore, possible to have a short deckhouse (55 ft. long) and a lengthy open deck aft. This longer-than-usual deck space aft enables the towing bits to be placed close to midships, thus improving towing conditions. Because Nylon towlines are used, the towbit hooks are babbitted to keep the rope from wearing.

The moulded length of the GRACE MORAN is 105 ft., with 27 ft. beam, and 14 ft. 6 in. depth. Her A. B. S. registered length is 99.5 ft. by 26.1 ft. breadth, and 12.75 ft. depth. The summer freeboard is 1 ft. 9¼ in.

In the deckhouse are two cabins, toilet, shower, refrigeration storage, and stores. Over the galley is the pilot house, where the engine and main motor controls are located, giving the helmsman complete control over the maneuvering of the machinery and ship. Her crew consists of six men—captain, deck mate, engineer, wiper, seaman and cook.

Constructed of welded steel she meets the American Bureau of Shipping requirements. One feature of special interest is the adoption of a unit foundation for all the auxiliary equipment on both the port and starboard sides of the engine room. She will be a familiar sight to passengers on liners entering the harbor of New York.

DESCRIPTION OF GRACE MORAN CLASS Diesel-Electric Harbor Tug

Dimensions:	
Length over Guards	106′
Length on deck, ex guards	105′
Length between perpendiculars	100′3″
Beam, Molded	27′
Depth, molded at midship	14′9″
Draft, forward	9′
Draft, aft	13′
Other Information:	
Gross Tonnage	238.28
Net Tonnage	15.
Lubricating Oil	385.90 gal.
Fuel, Diesel	33,948 gal.
Potable Water	1,268 gal.
Forepeak Water	634 gal.
Steering Gear	Electric, chain, Wildcat type
Engine: Make	General Motors Model 16-278A
Type	Diesel, two-cycle
Horsepower	1750
No. of Cylinders	16
Bore and Stroke	8¼″ x 10½″
R.P.M.	750
Main Generator: Make	Allis Chalmers, D.C.
Volts	525
Kilowatts	1210
R.P.M.	750
Propulsion Motor: Make	Westinghouse, D.C.
Volts	525
Horsepower	1500
R.P.M.	600-750

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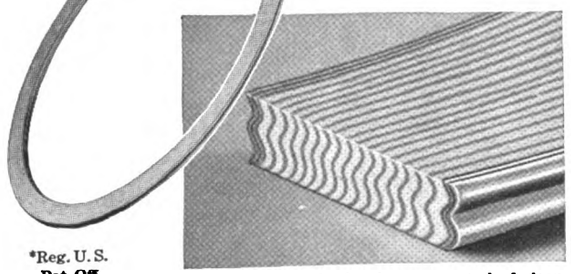
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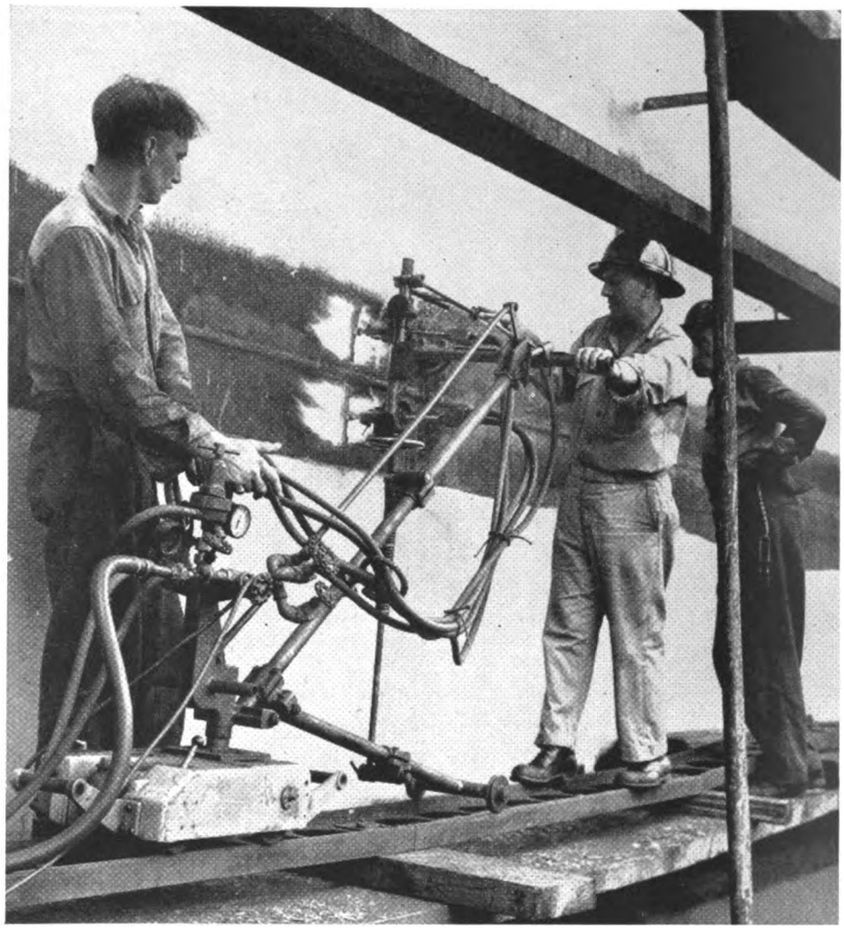


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Manufacturers of DURAHART Protective Coatings

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STRESS RELIEVING WELDED SHIPS

By U. W. HIRD[1]
Union Oil Company of California



A worker at the Brooklyn Division of Todd Shipyards Corporation moves a stress-relieving machine along the welded seams of a T-2 tanker to heat a six-inch strip on each side of the seam to 400° F., and immediately cools it off with a stream of water. This particular job was performed on almost 9,000 feet of seams from keel to rail and along the tanker's deck.

A welded ship in the "as welded" condition contains "residual" stresses within the welds, and some of these welds will actually be stressed up to the yield point of the steel or 50 to 55,000 p.s.i. Normally in welding a joint such as a shell butt, two types of stresses may result. The first, with which we are all familiar, is termed by some as "reaction" stress and is caused when welding is accomplished on a joint that is in a locked up condition, such as a butt between two shell plates to which the internal frames and longitudinals are already rigidly welded. This stress is caused by the tendency of the weld metal to shrink transversely or perpendicular to the joint when the plate itself is restrained from moving. We know this kind of stress can be high enough actually to rupture the joint and also it is additive to any service stress which may subsequently be applied to the joint or structure. All people concerned with shipbuilding are agreed that this type of stress is exceedingly dangerous to the integrity of a welded structure and is to be avoided. Fortunately there is a positive method of preventing "reaction" stresses. This is done by observing a careful, logical order in the erection, fitting and welding of a new ship—which sequence of events is specifically intended to allow all welding to be done with the welded members in as unrestrained a manner as possible. With experienced development and careful observance such a "welding sequence" will greatly reduce "Reaction stresses."

Residual Stress

The second type of stress, called "residual stress," is one with which we are not so familiar and one which we cannot so easily and logically overcome. Weld metal tends to shrink lengthwise as well as transversely and in a joint, such as the shell butt mentioned above, it will be restrained from shrinking longitudinally by the surrounding plate material regardless of whether the joint is welded in a restrained condition or not. (A typical residual stress situation, as might exist in a shell butt or seam, is shown in Fig. 1.) Welding sequence cannot be counted on to reduce residual stresses. The only sure way to accomplish this is to place the welded structure into a furnace and heat it up slowly to 1200 to 1300°F. At this temperature the metal becomes sufficiently plastic to flow slightly and realign itself in a condition of very low stress. This process is called "Oven Stress Relief" and cannot be accomplished practically on a structure as large as a ship Consequently a welded ship is a structure which might be said to be very highly stressed at certain points before it ever experiences hogging, sagging and other dynamic stresses of service. The deleterious effects of residual stresses on the ultimate strength of a ship is debatable; the only sure thing about the residual stresses is that they are present and they are frequently in the magnitude of 50,000 p.s.i. to 55,000 p.s.i. Recent investigations[2] by Mr. T. W. Greene[3], however, suggest strongly that residual stresses may have been a positive cause of cracks which welded ships have and still are experiencing. Low Temperature Stress Relief was conceived and developed to reduce residual stresses to a negligible amount in any weldment which was too large to be oven stress relieved.

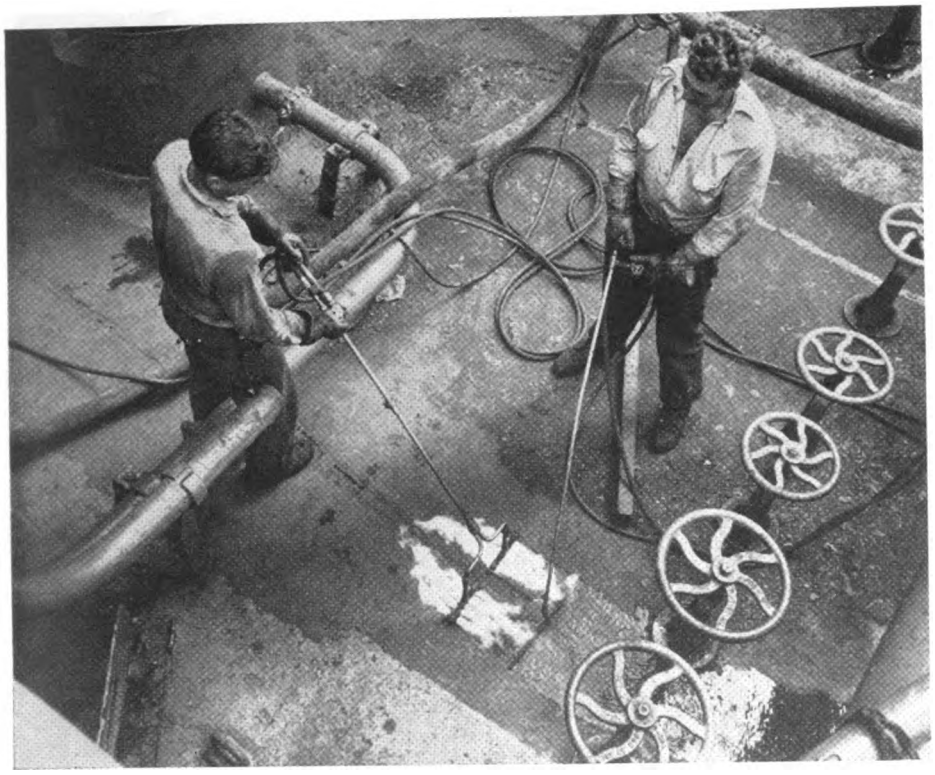
Low Temperature Stress Relief

The method was invented by Harry E. Kennedy of California, and in September, 1943, the Linde Air Products Company and the Sun Shipbuilding and Dry Dock Company started an extensive cooperative investigation to determine its effectiveness and the possibility of applying it to the critical welds in ships. It was definitely proven effective and since has been applied to the welds of approximately 50 ships as well as a number of smaller welded structures, such as propane tanks and other pressure vessels. T. W. Greene of Linde Air Products Company has been in charge of this investigation and application of the process since its beginning.

Low Temperature Stress Relief is analogous to mechanical stress relief which is graphically represented in Fig. 2. The yield point stresses found longitudinally in a weld correspond to an elastic strain of about 0.0015 inch per inch of length. They are present only because of the relative difference in length between the plate material and the cooled weld metal. Their release can be accomplished merely by reducing the difference in length between the two.

Since the weld metal is already stretched to the yield point, any stretch resulting from tension loading of the entire structure would be primarily plastic in the weld and elastic in the plate material. This would change the length relationship upon release of load, because the

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A hand stress-relieving set-up allows Todd workers to get at short butt welds near pipes and wheels where the big machine cannot be set up.

plate material would be elastic enough to return to its original length while the weld metal which had undergone plastic flow under tension, would have gained in length by an amount equal to the loading strain. The stress in the weld upon removal of the load would thereby be reduced by an amount nearly equal to the stress originally applied to the structure. This is called mechanical stress relief and in which there is no permanent change of the length and width of the weldment.

Applied Method

Low Temperature Stress Relief accomplishes this very same result by heating a band of metal on each side of and approximately 2″ distant from the welded joint. As explained above, the weld metal was stressed very close to the yield point when it cooled down originally. Upon being forced to elongate plastically by the expansion of the heated portion of the metal, the weld metal changes length permanently, the plate itself temporarily and, when the "quench" or last step in the process takes place, the length relationship between the weld and the plate material is improved and residual stress reduced. It has been demonstrated that this process can be almost 100% effective by achieving a temperature of 225°F. between the heated zone and the weld metal. Fig. 3‘ portrays welding stresses in a manual butt weld before and after low temperature stress relieving.

In commercial application this process is accomplished by applying the heat of multiple oxyacetylene flames from two type E6 flame priming heads (6″ wide) parallel to and on each side of the weld. The center of each of these six-inch bands is five inches from the center line of the weld. About six inches behind the flame, a combined air and water quench impinges on the plate. This serves two functions. It takes away all the surplus heat after the stress relieving has been accomplished, localizing the application to the seam being treated and preventing any possible expansion, buckling or distortion of the plating. By far the most important function is to assist and supplement the expansion forces set up by the heating.

The objective of the stress-relieving operation is temporarily to expand the plate differentially on both sides of the weld in relation to the weld. If the spray is properly located and correlated with the heating, it will rapidly cool the plating and cause it to contract behind the heated area. This contraction will materially assist the expansion and forces set up in the area being heated. This supplementary, correlated cooling permits full reduction of residual weld stresses without overheating or upsetting the heated area and without distortion, dimensional change or imposition of residual stresses elsewhere.

The heat input of the process is controlled by the speed of travel of the two heating heads. As mentioned above, the optimum results are obtained with a temperature differential of about 225° F. between the heated zone and the weld metal. In actual practice it has been found impossible to avoid some rise in temperature of the weld metal due to conduction, and tests showed that it is necessary to bring the heated zone of the plate up to about 400°F. before the desired differential can be obtained. Temperature is checked by means of temperature indicating crayons and a shield. While the Stress Relieving machine is in motion, the shield is placed on the plate in the heated zone between the flame and the quench. Then a mark is made with the temperature indicating crayons across the heated path, as close to the flame as possible, and the temperature of the plate determined. If the temperature is too high (above 400°F.) the machine is speeded up and vice versa. The ambient temperature also affects the process and it has been found that it is necessary to put more heat into the plate on a hot day than it is on a cold day, when it would appear upon casual thought that just the opposite would be true.

Temperature Control

During the process of stress relieving the welds in the deck or shell of a ship, it is necessary to check the temperature constantly. This is because of the many different thicknesses of plating encountered which require a variation of heat

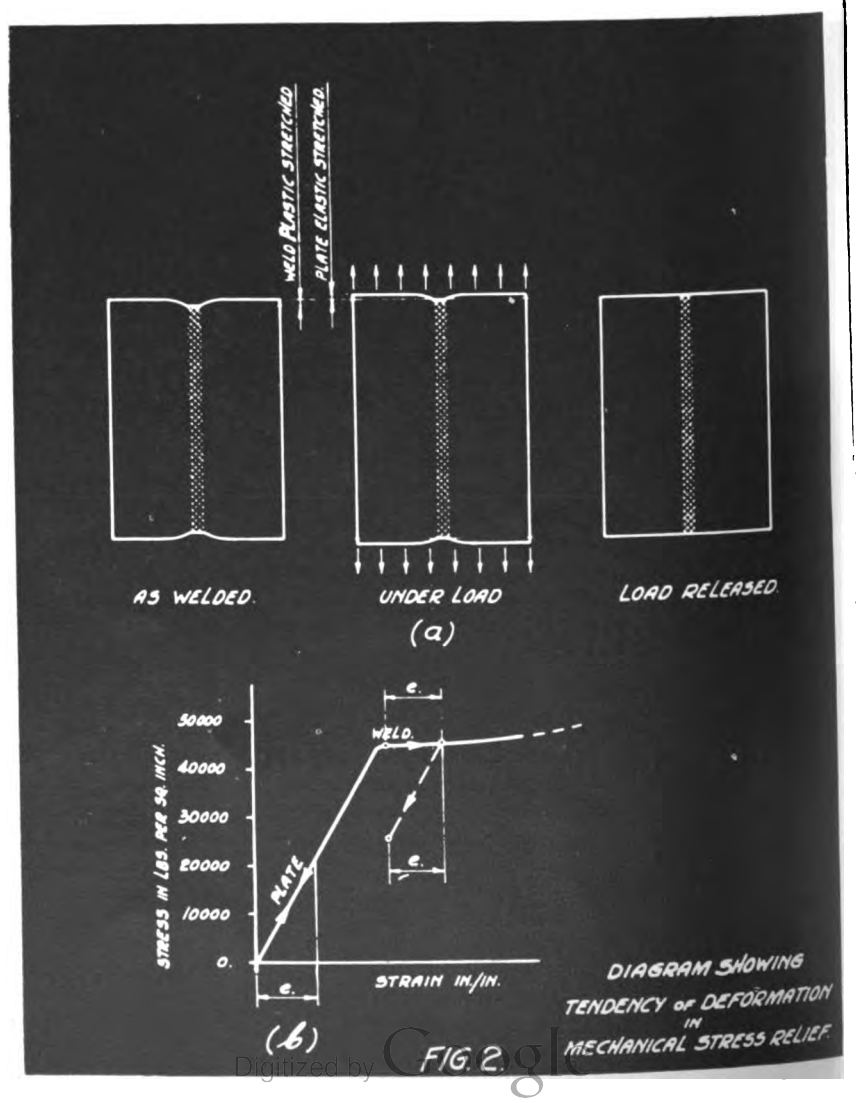


FIG. 2.

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input in order to maintain the same temperature differential between the weld and the plate being heated. Another "must" in this process is that the plating be scaled and wire brushed down to bare metal in the path of the flames. The well known insulating qualities of paint and rust scale are not any more welcome to this process than they are to the inside of a boiler tube and they must be removed. This problem is not so critical on new work where the members are usually "stress relieved" before they are painted, but on old work it is necessary to spend quite a bit of time and effort to remove paint and scale completely before starting the stress relief process. There are numerous problems that arise in connection with applying this process to a ship, such as, two different thickness plates side by side, water in the tanks, etc., and they have to be dealt with in a common sense fashion as they arise.



The accompanying paper on "The Effectiveness of Low Temperature Stress Relief as Applied to Welded Ships" was delivered by Mr. Hird, a naval architect for the Union Oil Company, before the April meeting of the Southern California Section of The Society of Naval Architects and Marine Engineers. Pictures show, left to right: KARL FRENCH, San Pedro, retiring chairman of the Section; "TIM" HIRD, the speaker; E. MEEWIG, Nederlands Line, Amsterdam; W. A. HARRINGTON, Manager of the Bethlehem shipyard at Terminal Island, and J. J. REURTS, Nederlands Line, San Francisco.

Summary

The Low Temperature Stress Relieving process does reduce residual stresses in welded joints to negligible amounts. (See Fig. 3 for actual results.) This has been proven by a number of tests and investigations. The process can be applied to the critical welds in a ship either during or after construction with almost equal effectiveness throughout about the midship two-thirds length. In addition, the Sun Shipbuilding and Dry Dock Company, Newport News Shipbuilding and Dry Dock Company and, the author believes, Bethlehem Steel Company also, are at present stress relieving the critical welds in the super tankers which are under construction. Apparently these shipyards feel that the additional cost is well worth while. Low Temperature Stress Relief has been accepted as a simple and inexpensive method of relieving the residual stresses in the accessible welded joints of structures too large to oven stress relieve—a modern ship is a striking example of such a structure.

Acknowledgments

The author wishes to express his appreciation for the following help in preparing this paper:

Newport News Shipbuilding and Dry Dock Company and The Linde Air Products Company for the permission to use the slides with which the discussion was illustrated.

Bethlehem Steel Company, Shipbuilding Division, Terminal Island, for reproducing the figures used so that they could be incorporated with the paper.

T. W. Greene for his advice in preparing the paper.

1. The opinions expressed in this paper are those of the author and do not necessarily represent those of the Union Oil Company.
2. Evaluation of the Effect of Residual Stresses—paper given before American Welding Society, October, 1948.
3. Engineer, Linde Air Products Company.
4. Plate MB-65-2 Welded and stress relieved in the Linde-Sun Investigation, 1943.
5. Todd Mimeographed paper.

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Newport News to Build U. S. Super Liner

(Continued from Page 36)

a committee which included representatives of the Maritime Commission, the Department of the Navy and the United States Lines.

This group gave particular attention to National Defense features which will make the vessel valuable as naval auxiliary in time of war. These features such as speed greatly in excess of commercial requirements, extraordinary cruising range, special safety hull design, independent engine rooms, special strengthening for gun platforms and certain navigational features ran the cost up from an estimated $43,000,000 for a similar vessel of commercial design to $70,373,000 for the National Defense ship.

The government's share of the cost of building the ship amounting to $42,285,784 (the difference between United States Lines' share, $28,078,216, and the total cost of $70,373,000) will be financed out of the $203,000,000 in contract authority for shipbuilding granted the Maritime Commission by Congress for fiscal 1949.

Construction Subsidy

The amount of construction differential subsidy was calculated in the cost of building what is termed a "commercial equivalent" vessel. That is a similar ship devoid of National Defense characteristics in a foreign yard as compared to its construction in a United States shipyard. The basic cost of the "commercial equivalent" ship in an American yard was found by the Commission to be $43,000,000 and

(Continued on Page 64)

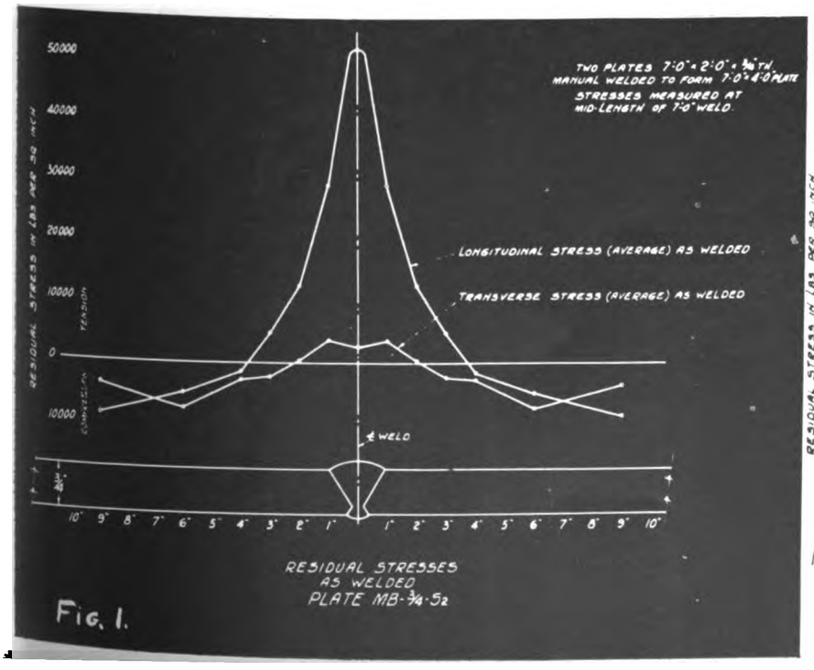


Fig. 1.

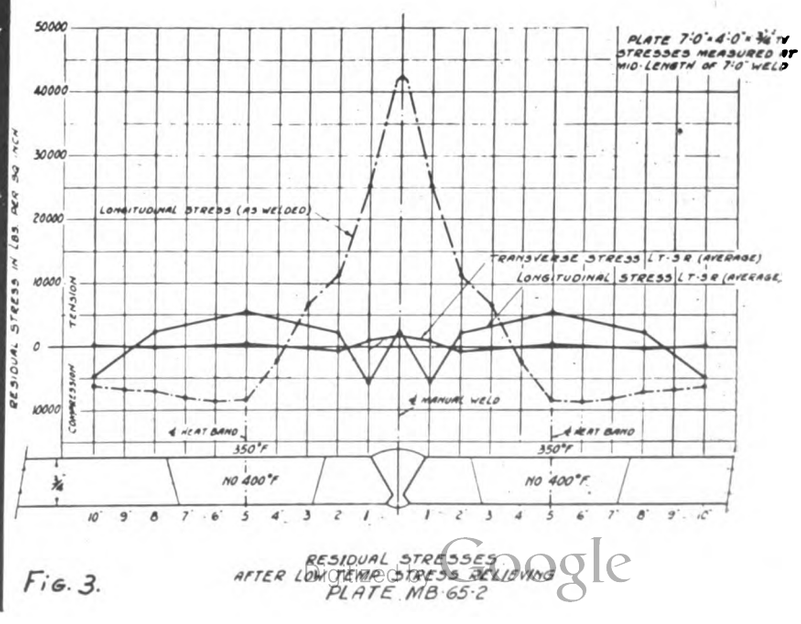
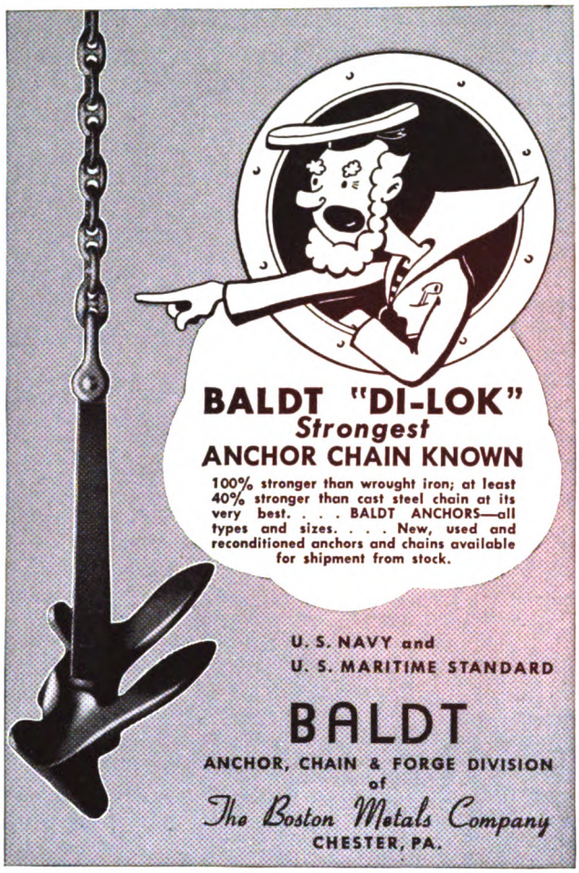


Fig. 3.

RESIDUAL STRESSES AFTER LOW TEMP. STRESS RELIEVING PLATE MB-65-2

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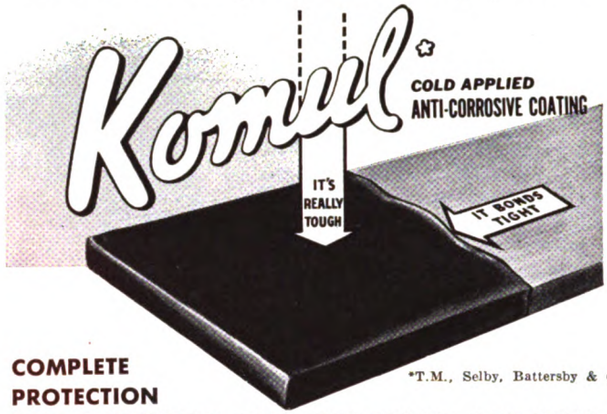
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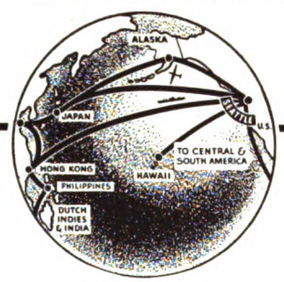
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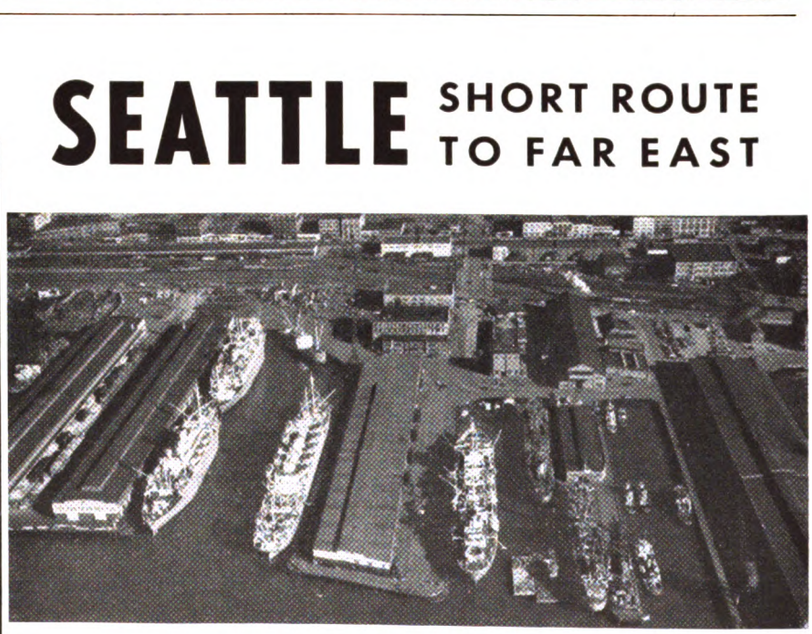
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"SOCONY 23" REPOWERED WITH DIESEL ENGINE



FERDINAND WIGT, below, Chief Engineer on "Socony 23" of the marine fleet of the Socony-Vacuum Oil Company, Inc., in the engine room of the vessel, newly converted from steam to Diesel to provide an increase of 100 percent in horsepower. Conversion of the vessel was part of a Socony-Vacuum program to rehabilitate and modernize its tug fleet to handle the company's new barges with their capacity of about 738,000 gallons each.

Converted from steam, a tug of the Socony-Vacuum Oil Company, Inc., has gone into service again in the New York Harbor area with its original horsepower increased 100 per cent by means of a Diesel engine.

In addition, Socony-Vacuum officials announced the "Socony 23" in the company's tug fleet has been entirely rehabilitated and modernized to handle the new, larger type of barges used for transportation of oil products in bulk.

Conversion of "Socony 23" is part of a general Socony-Vacuum modernization and rehabilitation program which includes the acquisition of a new tug last fall. With the conversion, the horsepower of "Socony 23" was increased from 600 to 1,200.

"Socony 23" was built originally in 1929 by the United Drydocks, Inc., now Bethlehem Steel Company of New York. Its overall length is 97 feet and its molded depth averages close to 10 ft. Its hull is steel with a riveted construction and the vessel has a loaded displacement of about 358 tons. It carries a crew of 12.

With its conversion, "Socony 23" can tow one of the new 17,500-barrel loaded barges at a speed of seven and a half miles per hour. The capacity of the new barges, of which four were added last year to Socony-Vacuum's facilities, is equivalent to approximately 738,000 gallons of crude oil or of finished petroleum products.

Traveling light, the tug has an average speed of almost 14 miles per hour and can go from full speed to a dead stop in the water within 22 seconds. Its fuel oil capacity is 22,000 gallons and it has 38,000 pounds of ballast to increase the stability.

"Socony 23" was converted to Diesel at the Wills-Speden Shipyard, Inc., Baltimore, Maryland. To replace the 600-horsepower steam engine, a 12-cylinder, two cycle General Motors Company engine was installed to drive the craft's three-bladed bronze propeller. The propeller is driven through a reduction and reverse gear supplied by the General Motors Company also.

Bilge and ballast pumps on "Socony 23" were transferred from the Socony-Vacuum tankers MAGNOLIA and SOCONY-VACUUM and overhauled. Original steam-driven gypsy and steering gear on the vessel were repowered with electric drives.

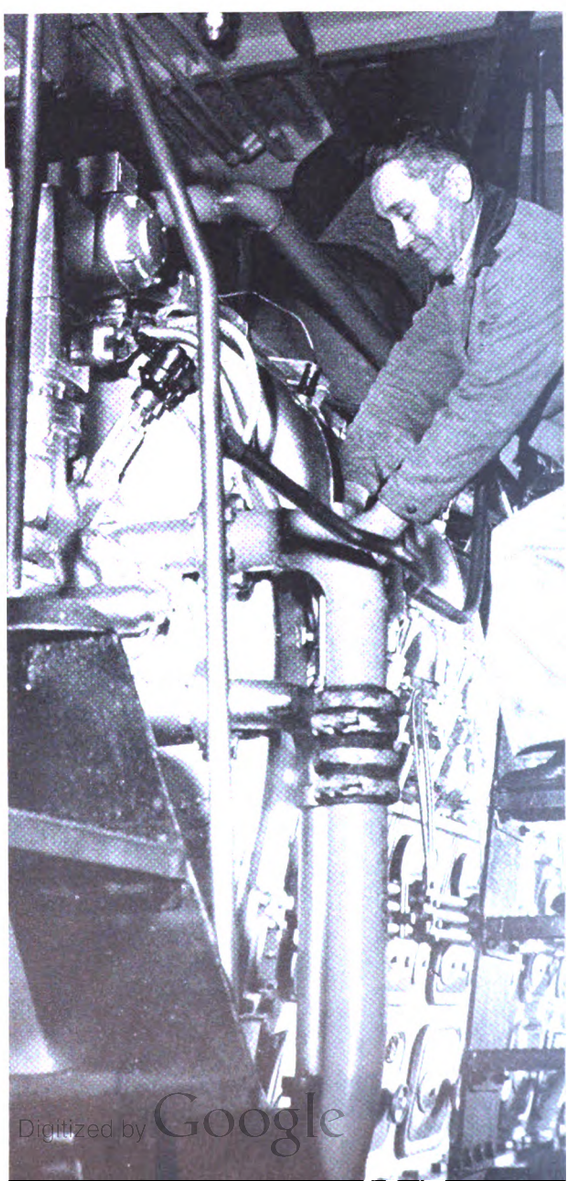
The original power plant on "Socony 23" was a vertical compound, surface condensing engine with steam supplied by a three-furnace, single ended marine boiler which provided 1,856 square feet of heating surface to supply steam at 155 pounds per square inch. The resultant thrust was about 14,000 pounds.

W. D. Fletcher, naval architect and marine engineer, prepared and developed the conversion plans in cooperation with Socony-Vacuum's marine construction and repair division.

Socony-Vacuum tugs assigned to the New York Harbor area are used principally in Long Island Sound, the Hudson River and coastwise between Philadelphia and New York.

A A A

China with 170,922 bales and Italy with 118,859 bales led the list of 23 foreign countries receiving cotton from the Port of Houston.



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THE SOCIETY OF PORT ENGINEERS



New York Port Engineers Hold Propeller Club Night

The dinner meeting of The Society of Marine Port Engineers, New York, N. Y., Inc., held April 20th, honored the officers of the Propeller Club of the United States and of the Port of New York, with Louis B. Pate, president of the national organization, as guest speaker. Members and guests present totaled 107, making it one of the largest meetings held by the society.

Lt. Comdr. Arthur M. Tode, USNR (ret.) presented his famous personally taken African movies, "Kahop of Kukuanaland," filmed on a safari from Cairo to Capetown last year.

Mr. Pate told the port engineers of the aims of the Propeller Club and described how it functioned in behalf of the American Merchant Marine.

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Fire Fighting With C-O-Two Reviewed by Northwest Groups

Using the film "Fire and Ice" as basis of discussion the Society of Port Engineers, Columbia River Area, discussed fire fighting with carbon dioxide at their March meeting with representatives of the C-O-TWO Fire Equipment Company. The Puget Sound Society followed with the same program in April with Walter Lembke, manager, fire fighting division, Pacific Marine Supply Company, and John Whitlock, district manager of C-O-TWO leading the discussion and answering the questions.

The Puget Sound Society utilized their April meeting to include a send-off to William Smith, Seattle marine surveyor. Associated with Lloyd's Register of Shipping at Los Angeles, Vancouver, B. C., and Seattle, for a long period, Smith has worked as private surveyor for past few years, and left Seattle for Los Angeles and San Diego on April 15 for an extended vacation. He was presented with a scroll officially designating him as Smith No. 1 on Seattle's waterfront.

The April meeting of the Columbia River Area engineers featured a discussion on manufacture of valves led by Mr. Wetzel, Crane Company, Portland. The program was repeated at Seattle in May with Harry W. Pennington, Crane Company, Seattle, in the spotlight.

Kenneth Webb, U. S. Salvage Association, handled a discussion on salvage operations at the May meeting of the Columbia River group. An exhibit of the film, "Salvage of the ss DIAMOND KNOT," was included as part of the program. Election of officers for the 1949-1950 year was also slated for the May meeting.

Booked for the June meeting of both

THE FIRST ANNUAL DINNER DANCE held by The Society of Marine Port Engineers New York, N.Y., Inc., in the Century Room of the Hotel Commodore, New York, April 29, 1949, was attended by 400 members and friends. About a hundred of those present were outside the camera's range.

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the Puget Sound and Columbia River Societies is a program on Dudley electronic control for expanding condensor and boiler tubes.

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Los Angeles Engineers Hear Talk on Arabian Oil Fields

More oil resources have been discovered in Saudi Arabia in recent years than has been taken out of the ground in the United States since the oil industry was founded in 1859, according to Ernie Perso, Texas Co. sales representative and speaker at the May meeting of The Society of Port Engineers, Los Angeles.

Illustrating his talk with slides, the oil man, who is a lubrication expert, said that Saudi Arabia fields, being developed with equipment shipped through the Port of Long Beach, are the richest ever discovered.

Any type of lubricant can be made anywhere under modern processes, and there is no point, he said, in a buyer demanding oil from a given area. His talk pertained principally to turbine and Diesel lubrication.

The meeting was conducted by Dan Dobler, who announced that the society's annual barbecue will be held in August.

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Naval Architects Hear Student Speakers

The April 22nd meeting of the New York Metropolitan Section of The Society of Naval Architects was held at the United States Merchant Marine Academy at Kings Point, N. Y., with two students presenting the papers.

Cadet Midshipman (Deck) Robert V. Lewis spoke on "The Inter-Relationship of the Naval Architect and the Ship's Officer," and Cadet Midshipman (Engine) C. P. Furney, presented a paper on "Proposed Automatic Tanker Loading Control." Discussion was provided by students from The New York State Merchant Marine Academy, Webb Institute of Naval Architecture, Stevens Institute of Technology and Cooper Union.

Officers for the 1949-1950 term were elected. J. Lyell Wilson, Director of Research, American Bureau of Shipping, was chosen chairman. Warner Lumbard, vice president, Simons-Boardman Publishing Co., was elected vice chairman; Manlius J. Giraldi of the technical staff of the American Bureau, was elected secretary-treasurer, and Everett F. Clark, Eastern Marine Manager, Westinghouse Electric Corp., was chosen as a member of the executive committee.

New working committees for the Section have been appointed. The chairman of the papers committee will be Douglas C. MacMillan, chief engineer for George G. Sharp, Naval Architect; John J. Demey, chief draftsman, Kearfott Co., will head the meetings committee; Harold M. Wick, assistant to the president, American Bureau of Shipping, will handle public relations; Barton B. Cook, assistant naval architect, Gibbs & Cox, is to head the auditing committee, while Bengt. E. Meurk, manager, Isthmian Steamship Co., will be chairman of the nominating committee.

Additional members of the executive committee and associated national officers of the Society include: John W. Hendry, manager, Special Products Sales, Bethlehem Steel Co., Shipbuilding Division, as national chairman of the local sections committee; William B. Jupp, manager, Marine Construction & Repair Division, Socony-Vacuum Oil Co., and Arthur N. Gatewood, chief engineer suveyor, American Bureau of Shipping, as past chairman and past vice chairman of the New York Metropolitan Section of the Society; Clifford W. Kiracofe, assistant to superintendent, Ship Repair Sales, Bethlehem Steel Co., Shipbuilding Division, as vice chairman, national membership committee of the Society.

TEXACO NIGHT AT SOUTHERN CALIFORNIA PORT ENGINEERS—Left to right: BERT HALE and DAN DOBLER, Secretary and President, respectively, of The Society of Port Engineers, Los Angeles; ERNIE PERSO, speaker of the evening, The Texas Oil Co.; DONALD MACKAY, sales representative, Texaco; DALE LYKE, General Electric Co.; HARRY F. MILLER, Forster Shipbuilding Co.

Second row, left to right: DICK STAKEMAN, Pacific Far East Line; PAUL GAUDIN, American-Pacific Steamship Co.; DICK BARTON, General Electric Co., MIKE KELLEY, Richfield Oil Co. and PHIL FLAIG, General Electric. Extreme right: E. S. RAMEY, Superintending Engineer, Luckenbach Steamship Company, shown at the Society of Port Engineers of Puget Sound.

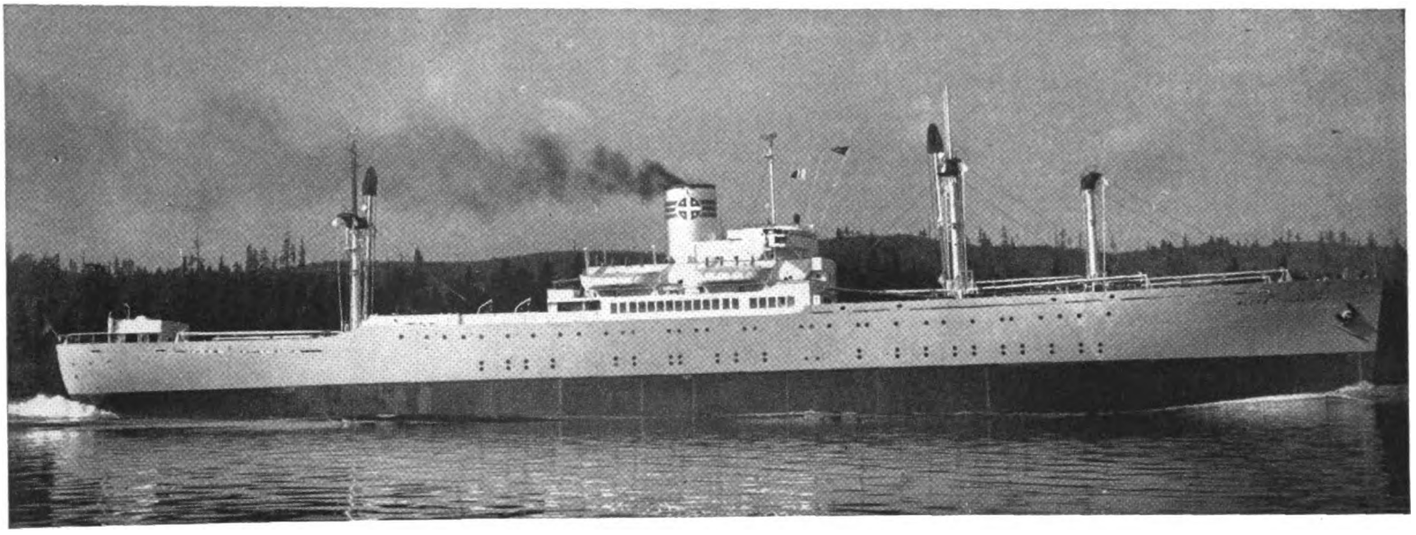
THE SOCIETY OF PORT ENGINEERS OF PUGET SOUND, bottom row, left to right: J. D. GILMOUR, standing, presenting scroll to WILLIAM SMITH, on behalf of the Society; standing, FRANK H. HOWARD, Superintending Engineer, American Mail Line; L. SIMONSEN, Marine Superintendent, Standard Oil Company of California; F. K. YOUNG, Marine Surveyor; J. D. GILMOUR, Alex Gow, Inc.; A. H. McDONALD, McGinitie and McDonald; ROY E. KNOWLES, Carmac Shipyards; seated: S. K. SMITH, American Bureau of Shipping; WILLIAM SMITH, vacationing in California; JAMES C. GOW, Alexander Gow, Inc.



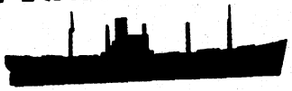
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OUTLOOK FOR THE USE OF

ALUMINUM IN SHIPS



OPERATING IDEAS



FOR MARINE SUPERINTENDENTS, PORT ENGINEERS, PORT CAPTAINS AND OTHER OPERATING EXECUTIVES

By E. V. LEWIS
Naval Architect
George G. Sharp

Aluminum alloy has been used for deckhouses of a number of recent ships, and there have been proposals for more extensive uses of the material. Accordingly a summary of the structural applications of aluminum to date and a discussion of future possibilities may be of interest. Although the use of aluminum for lifeboats, davits, ladders, airports, hardware, joiner bulkheads, various machinery parts and fittings of all kinds is also of interest and importance, the discussion here applies mainly to structural uses.

Present Use of Aluminum

The merchant ships on which aluminum alloys have been used so far for deckhouses are listed below. A significant saving in weight and consequent improvement in stability has been attained in these vessels.

The particular alloy generally used in the above ships is designated 61S-T6 by the Aluminum Co. of America and was selected because of its good combination of high strength, good workability and excellent resistance to corrosion. In this alloy there are small percentages of magnesium and silicon, and traces of copper and chromium. It is heat treated to develop maximum strength. Comparing alloy 61S-T6 with mild steel, it has about 1/3 the weight, has a modulus of elasticity about 1/3, and has a yield strength which is slightly greater and an ultimate tensile strength which is about 70%.

Future Possibilities: The All-Aluminum Ship

The Alcoa Steamship Company has had a particularly interesting proposal under consideration. Two separate designs were developed for deadweight cargo ships for two different services, to be constructed entirely of aluminum alloy. One of these was worked out by Gibbs and Cox, Inc. and the other by George G. Sharp. The schemes appeared to be entirely feasible technically, and because of the limitations in dimensions and draft imposed in each case there were notable gains in deadweight carrying capacity over comparable steel designs. Economic studies indicated that the aluminum ships compared quite favorably with the steel designs. The increased cargo revenue resulting from the greater deadweight would just about pay for the extra capital charges and insurance costs. Hence, it may be concluded that relatively small reduction in the present-day cost of material and/or erection would result in an actual profit on the added investment in such cases as this, where maximum deadweight is desired on limited dimensions.

For a detailed discussion of the problems involved in designing an all-aluminum ship, see the bibliography.

Aluminum Superstructures

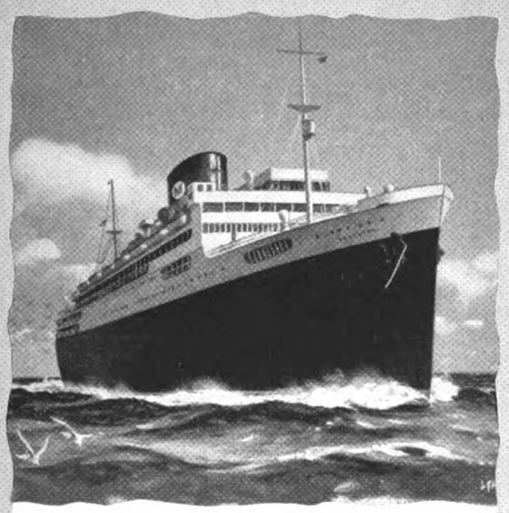
The use of aluminum for deckhouses in the ships listed at the beginning of the article points the way to the possibility of constructing entire superstructures of aluminum. (By superstructures are meant erections which extend to the sides of the ship and are tied in structurally to the main hull.) In addition to the obvious advantage of improved stability, this possibility offers an interesting solution to the basic structural problem of superstructures.

A ship at sea undergoes longitudinal bending stresses as a result of the difference in fore and aft distribution of weights and wave buoyancy. The resulting strains in the upper deck of the main hull induce stresses in the superstructure attached to it, and the sharp discontinuities at the ends of the superstructure make the problem of attachment difficult.

There are two methods commonly used in designing steel superstructures. The first involves the fitting of expansion joints for the purpose of breaking up a long superstructure into a number of short ones. This method has been only partially successful, for stress concentrations are increased in way of the expansion joints and cracking difficulties persist. Another method which is now more generally used is to make the scantlings of the superstructure sufficiently heavy so that the allowable stress in the strength deck is not exceeded in any of the superstructure decks.

The use of aluminum alloy for superstructures offers a third possible solution. Because of the low modulus of elas-

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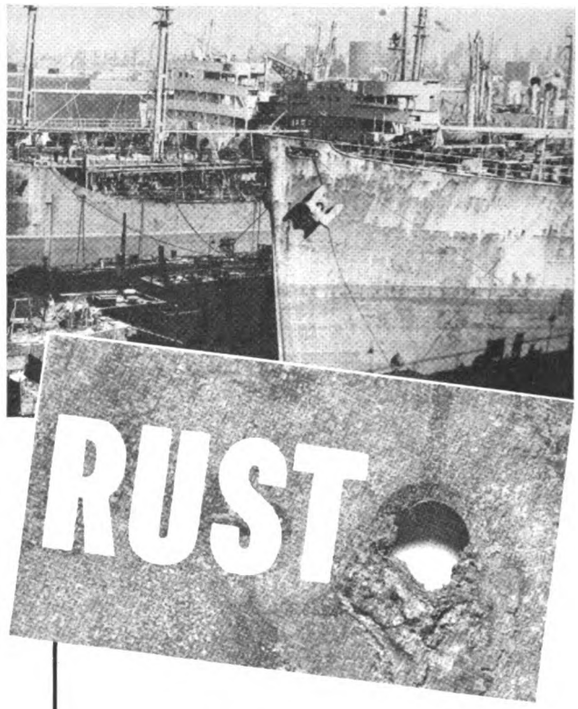
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ticity of the material, the aluminum superstructure decks can be subjected to considerable deflection without approaching the allowable stress. Furthermore, with an aluminum superstructure problems of end attachment are greatly reduced, and stress concentration at cuts for windows and doors are not so serious.

In a study of aluminum superstructures recently completed by the author (see bibliography) hypothetical ships of normal steel construction were compared with ships redesigned to take advantage of all-aluminum superstructures. For example, in a 700 ft. ship with 93. ft. beam where a saving of about 900 tons might be obtainable by using an aluminum superstructure, a 2′-6″ reduction in beam was possible for the same stability.

This beam reduction gave a decreased displacement, so that the ship required less power for the same speed. The theoretical annual decrease in fuel consumption could then be calculated and compared with the added capital charges and insurance costs resulting from the higher first cost of the part-aluminum ship.

It was found that at present-day material costs—aluminum approximately 6 times steel, per pound—the shipyard construction cost for an aluminum superstructure would have to be about the same or somewhat less than a comparable steel superstructure if aluminum were to be worth considering economically. At the present time, therefore, aluminum superstructures generally cannot be said to be economical for ocean-going passenger liners. However, a reduction in the price of aluminum would change the picture, a reduction of 25%, for example, being roughly equivalent to an 18% reduction in construction cost. Even without a reduction in material cost it is conceivable that when the use of aluminum becomes more general the construction costs can be reduced to the point where aluminum will be economical under the right conditions.

Practical Problems

Some of the practical problems which are responsible for present-day higher costs of aluminum construction may be discussed briefly. First, although methods of welding aluminum alloys are being developed, at the present time riveting must be the basic fabrication method. Rivets in diameters up to ½ inch, which would be used in superstructures, can be rivetted cold by pneumatic hammers without trouble. Larger diameters in the main hull offer some difficulty in that the rivets must be heated in a controlled temperature oven before driving.

Aluminum is an easy material to work since it is light and easy to cut and drill. Flame cutting cannot be used, but plates up to about ½ inch thick can be sheared and thicker plates can be cut with circular or band saws. Flanging to a good radius and ordinary forming as called for in superstructure construction can be carried out cold. Where considerable shape is involved, however, as in bilge shell strakes, heating is required and reheat treating subsequently to restore the full strength of the material. Generally some extra care is necessary in handling aluminum to avoid marring the surfaces.

Additional problems arise in outfitting an aluminum ship. First, except where aluminum stud welding can be applied, all fittings, hangers, joiner work, etc., must be attached to main structural members by riveting or bolting. Second, where dissimilar metals are attached, insulation must be provided between them and the aluminum in order to prevent galvanic action. Neither of these problems is insurmountable, but they do add somewhat to the cost of an aluminum structure.

The low melting point of aluminum presents a problem in connection with fire protection. Main structural members, such as columns, girders, house sides and bulkheads supporting loads from above must be protected from excessive heat or a possible fire, but the customary linings and ceilings will usually provide the necessary protection. In the case of bulkheads required to meet A-15, A-30 and A-60 fire requirements, the method of insulation adopted must be one in which the material is applied to both sides, in order to meet the integrity requirements. Similarly, ceilings are needed under all aluminum decks.

Another problem in a ship of composite construction is that of temperature effects. The coefficient of expansion of aluminum is approximately twice that of steel, and hence an excessive rise in temperature will cause buckling of the aluminum. This can be controlled by choice of time of day for erection and by protecting the aluminum from direct rays of the sun.

Conclusion

From the above discussion it may be seen that aluminum has definite technical advantages for use in shipbuilding. For certain specialized applications, especially where there are limitations in dimensions, it may prove economical as well. However, for general application the cost of the material and of erecting it are still somewhat high for general economical use. If there is a gradual reduction in the cost of aluminum, it will no doubt give further impetus to the search for more economical solutions to the practical construction problems, and aluminum will then become a standard material for merchant ship construction. Meanwhile, it will probably continue to be used for upper deckhouses of passenger ships where the gain in stability is particularly advantageous. It is understood that extensive use of aluminum is contemplated for the new U. S. Lines' superliner and on two French liners now under construction.

Ship	*Extent of Aluminum*
S. S. PRESIDENT CLEVELAND S. S. PRESIDENT WILSON	Deckhouse 142x42 ft. and smaller house and stacks above.
S. S. DEL NORTE S. S. DEL SUD S. S. DEL MAR	Stackhouse, 65x35 ft., two levels.
S. S. ALCOA CAVALIER S. S. ALCOA CORSAIR S. S. ALCOA CLIPPER	Deckhouse 45x30 ft. and wheelhouse and stack above.
FERRY GOLD STAR MOTHER FERRY MARY MURRAY FERRY MISS NEW YORK	Shade deck and two pilot houses.
S. S. LURLINE (Conversion)	Deckhouse, 96x43 ft. (on steel framework) and part of deckhouse below it.
M. S. REDFERN M. S. REDRIVER	Poop, bridge and stack.
M. S. SHIH MEN and 5 Sister Ships	Deckhouses 115x25 ft., 2 levels, and stack above.
M. S. HU MEN and 2 Sister Ships	Deckhouses 190x38 ft., 2 levels, and small house and stack above.
M. S. STOCKHOLM	Boat and Navigating Deck Houses and Stack.
M. S. FERN PLANT	Upper deckhouse and wheelhouse.

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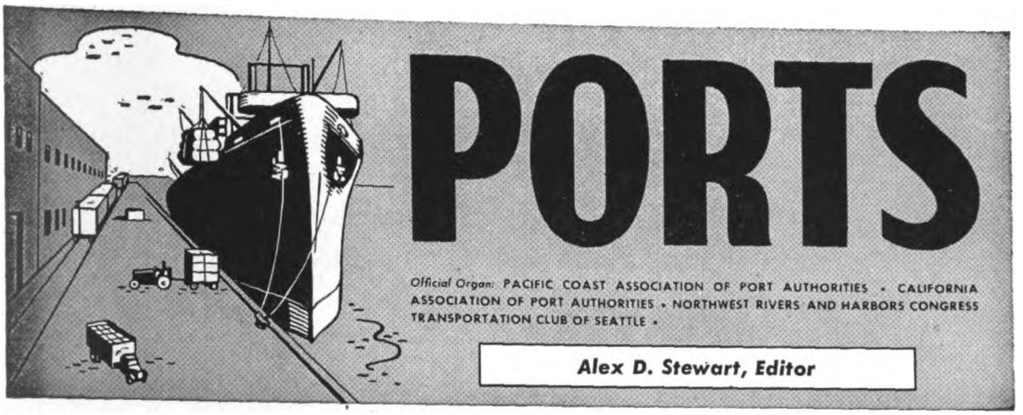
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Port of Los Angeles Plans New Construction Projects

Construction projects for new shipping facilities in Los Angeles Harbor will cost $9,153,100, it was disclosed when the 1949-50 fiscal year budget totaling $14,616,560 was approved in May by the Board of Harbor Commissioners.

The new budget shows an increase in administrative and operating expense of $291,000 attributed to salary and wage increases; higher insurance premiums, and deficits anticipated in the operation of foreign trade zone, which is expected to be authorized by the foreign trade zones board this summer.

Maintenance work in Port of Los Angeles next year will cost $600,000 allowing for the completion of long-needed work deferred during the war years.

In his transmittal letter, Arthur Eldridge, general manager, listed the following construction projects: Passenger marine and cargo terminal, West Basin, $5,800,000; apron wharf and transit sheds at Berths 153, 154 and 155, $2,458,000; wholesale fish market building, Slip No. 1, $450,000; new incinerator plant, $250,000; new paving in fish harbor, $100,000; new high line facilities at Berth 181, $100,000, and $45,000 for new fencing, gates and floodlights at site of foreign trade zone.

The budget includes $446,078 to pay interest on outstanding bonds during the year.

An amount of $50,000 was omitted from operating revenues in anticipation of early board action rescinding the 5c a ton truck charge levied at Los Angeles Harbor on cargo moving to or from the port by any of the 200 motor truck carriers serving the port.

The budget reflected an anticipated loss of $400,000 during the year because of reduction in land rentals and oil royalties, according to Eldridge. However, the overall budget figure was only $4,000,000 less than the 1948-49 figure and that amount was spent on new construction during the last fiscal year.

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M. J. Weber Joins Tait Stevedoring Firm

M. J. (Bud) Weber, formerly vice-president and operating manager of Griffiths and Sprague Stevedoring Company, Seattle, has been appointed vice-president and operating manager of Tait Stevedoring Company, Inc., Seattle.

Starting on the Seattle waterfront in 1915 as a checker, Weber has been engaged in the marine industry ever since his earlier years with Isthmian Line, Luckenbach, A. C. Dutton Lumber Company and States Steamship Company. In 1937 he became one of the principal owners of Griffiths and Sprague Stevedoring Company. A year ago he purchased the Puget Sound Stevedoring Company and a month ago announced sale of his stock in the Griffiths & Sprague Company.

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Port of Seattle Organizes Public Relations Department

Col. Warren D. Lamport, General Manager of the Port of Seattle, has announced the appointment of John M. Haydon as director of the newly-created Port of Seattle department of public relations.

"Creation of this new department of public relations was brought about through action of the commissioners, J. A. Earley, E. H. Savage and Admiral Gordon Rowe," Lamport stated. "Study of the Port's position in Seattle's structure in relation to industry and population showed that an integrated public relations and advertising program would more completely serve the Port's needs."

Pacific Coast Port Men Meet at Seattle in July

The 36th annual meeting of the Pacific Coast Association of Port Authorities is set for July 22, 23 and 24, at Seattle with the Olympic Hotel as headquarters. J. A. Earley, Seattle, is president of the association; Colonel Warren D. Lamport, Seattle, is secretary-treasurer. Vice-presidents are C. S. Sampson of Los Angeles and Martel Wilson of Stockton. All ports on the Pacific from San Diego to Vancouver and New Westminster, British Columbia, are represented on the board of directors.

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Upward Trend in Shipbuilding

(Continued from Page 31)

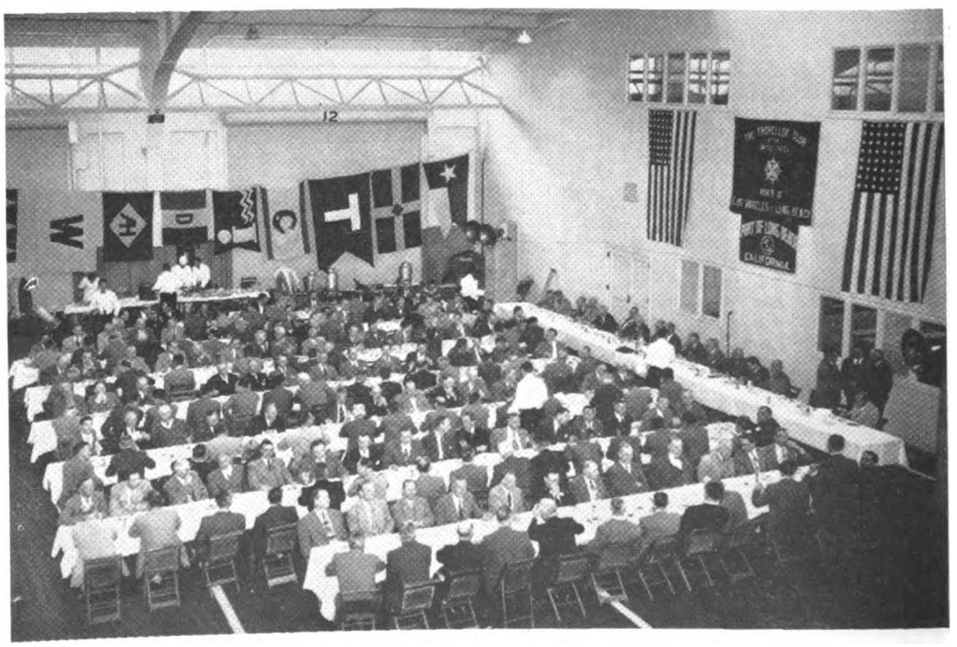
same period, the United States percentage has increased from 9.8% to 10.7%, while the other countries combined have increased their percentage from 39.1% to 41.7%. The United States, which ranked third in the December quarter, being preceded by Great Britain and Ireland and France, now stands second in total output, due to a decline of 44,000 tons for France in the March quarter.

The shipping now being built to Lloyd's Register classification throughout the world is reported as 3,062,055 tons (including 247,063 British Corporation class). Of the total, 1,958,058 tons are being constructed in Great Britain and Ireland, and 1,103,997 tons in other maritime countries. This indicates that 94.3% of all the shipbuilding in Great Britain and Ireland and 70.3% in all countries combined is being produced under Lloyd's classification.

THE PORT OF LONG BEACH was host at a luncheon meeting of the Los Angeles-Long Beach Propeller Club held in April in a newly completed transit shed on that harbor's Pier A—described as the largest clear span transit shed in the world on the longest pier in the world, the pier extending 6,000 feet out from shore.

This new transit shed, just completed at a cost of approximately $1,500,000 is 1,152 feet long, 200 feet wide and contains 233,456 square feet or 5.36 acres of space.

W. R. (FROSTY) MARTIN, President of the Long Beach Board of Harbor Commissioners and E. J. AMAR, Long Beach Port Manager, acted as hosts to the approximately 300 members and guests attending.



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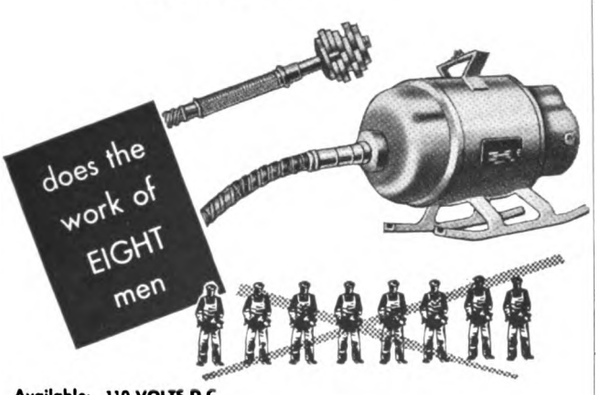
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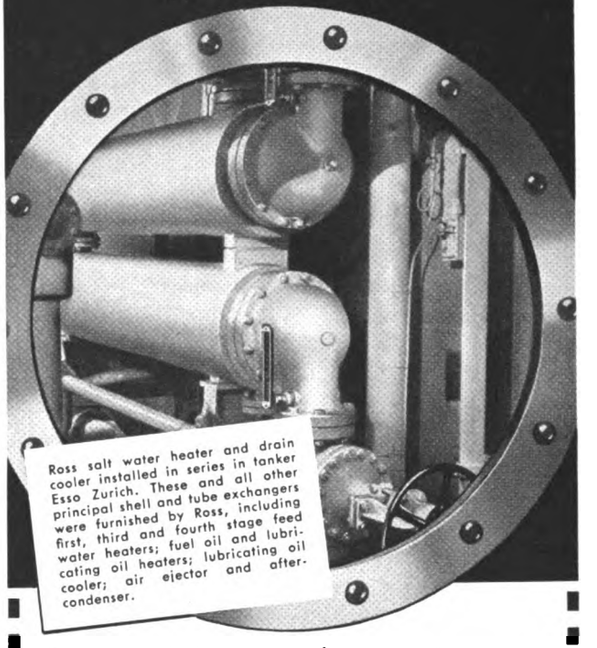
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ACCIDENT PREVENTION BUREAU of the Pacific Maritime Association awards safety trophies to cargo handlers at Los Angeles and San Francisco. Left to right: T. W. BUCHHOLZ, Metropolitan Stevedoring Co. presents the offshore coast trophy to R. S. GRAY, Operating Superintendent of Matson Terminals, Inc., Wilmington, at Southern California dinner.

Photo at right: at San Francisco the lineup shows: JOE OLSON, HAROLD GADE and CHARLES GIELOW, San Francisco Stevedoring Co.; JOS. DELSOL, Pacific Stevedoring & Ballasting Co.; FRANK E. WAGENER, C. J. Hendry Company; CHARLES HASELTINE, Pacific Stevedoring & Ballast Co., PETER HOWARD, Howard Terminal, and CAPTAIN G. R. MUNRO, Matson Terminals.

Newport News Builds Liner

(Continued from Page 53)

its cost in a foreign yard $25,575,000. On a percentage basis, the construction differential subsidy is approximately 40 per cent. To this estimated cost of building the ship abroad was added a pro rata allowance for contract plans and specifications, for special furnishings and supervision and inspection during construction. That would be applicable to the construction abroad making the estimated cost of building the ship in a foreign yard $26,749,730.

In calculating the final price for which the ship would be sold to the United States Lines the Commission increased the figure of $26,749,730 by 5% as an addition to the commercial value to the ship of certain national defense features. This brought the total cost to the United States Lines to $28,087,216.

Admiral Smith described the Commission's decision to build the superliner as "One of the most important the Commission has ever made."

Pointing out that the economic welfare and national securities of the country depended largely on the development and maintenance of a Merchant Marine adequate for both trade and defense he said, "Since the war we have been woefully short of passenger ships under the American flag. We have been not only short of this kind of service but in danger of a more serious shortage of troopship tonnage in case of emergency. I am very happy we are going ahead with the ship and I am sure our decision will never be regretted. United States Lines is to be congratulated for its decision to build this ship."

General Franklin sent the following wire to Captain John W. Anderson of the AMERICA at sea:

> Please advise your officers and crew that the Board of Directors of the United States Lines has today agreed to purchase a 48,000 ton passenger liner with a capacity of 2,000 passengers and capable of maintaining a two-weekly turn around for our North Atlantic passenger trade to be delivered in not more than forty months for twenty-eight million dollars Stop The splendid record of the AMERICA due in large measure to her officers and crew has been a factor in enabling the company to order this important addition to the fleet and will give an opportunity for well deserved promotions.
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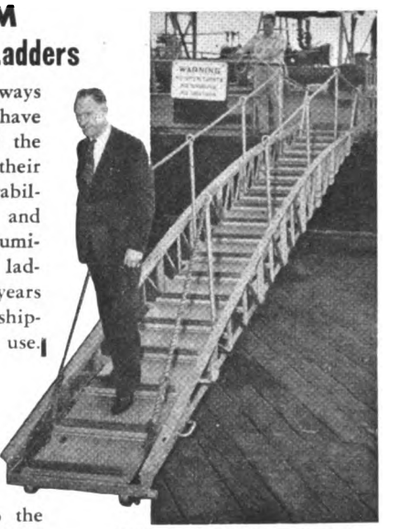
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Bailey Refrigeration Operating in New Orleans

The Bailey Refrigeration Co., Inc., of 348 Hamilton Ave., Brooklyn, established a branch sales and service office in New Orleans last August, and Ralph R. Bailey, president, reports it has developed a good volume of marine refrigeration and air conditioning work under Earl Hansen, manager. Mr. Hansen has been associated with the Bailey firm since it was organized. The New Orleans office and shop is located at 915 Gaiennie St.

Recently the Bailey Refrigeration Co., Inc., became U. S. A. representatives for Thomas Sabroe & Co., Ltd., Aarhus, Denmark, long established makers of marine refrigeration and air conditioning equipment with installations aboard vessels of practically every maritime nation. Parts for Sabroe shipboard equipment are now stocked by Bailey Offices in both Brooklyn and New Orleans.

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New Vessels to Have Pilot Salinity Indicators

Complete Pilot Salinity Indicator Systems for both boiler feedwater systems and evaporator control, have been ordered by the Bethlehem Steel Company, Shipbuilding Division, at Quincy, Massachusetts, for the two new American Export Line ships, the INDEPENDENCE and the CONSTITUTION.

The New York Shipbuilding Corporation of Camden, N. J., has also ordered similar Pilot systems for the three American President Lines passenger-cargo vessels under construction there.

The Pilot Salinity Indicator is manufactured by the Pilot Marine Corporation of 39 Broadway, New York, N. Y.

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Texaco Opens New Fuel Terminal in New York Area

The opening of a new fuel terminal to service vessels in New York harbor is announced by Mr. J. G. van Santvoord, manager of the Marine Sales Division of The Texas Company.

The new terminal is located at the B. & M. Corporation Dock on the north side of the entrance of the Morris Canal at the North River, Jersey City, N. J.

Texaco Diesel fuel and lubricating oils, also bunker fuel and marine engine oils, are available at the dock. At the present time no provision is being made for the servicing of pleasure boats and other small craft, although this is contemplated for the future.

High speed pumps assure rapid fueling service at the terminal's 235 feet of dock space. There is a low water depth of 21 feet alongside the dock.

U. S. Equipment Shipped to Ship-Repair Yard in Antartic

The Arnessen Electric Company, of 116 Broad street, New York, N. Y., in conjunction with Westinghouse Electric Company, the manufacturers, is supplying to the Compania Argentina de Pesca of Buenos Aires, a 60 HP 530 RPM, 440 Volt, DC motor and control.

This unit is specially designed to drive the main pump on a floating drydock located on the island of South Georgia. Since South Georgia is within the Antartic Circle, this is the southernmost ship-repair facility in the world.

Texas Transport and Terminal Company are the shippers.

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Radiomarine Names L. T. Gates Service Manager

Lester T. Gates, formerly supervisor of radar installations, has been promoted to the post of general service manager, according to a recent announcement by George F. Shecklen, executive vice president of Radiomarine Corporation of America, a service of RCA.

He will supervise the installation, maintenance and servicing of all the company's marine communication and electronic navigational products and direct the service activities of 23 wholly-owned Radiomarine service stations, and numerous affiliated service companies throughout the country.

A graduate of RCA Institutes in 1922, and former shipboard radio operator, Mr. Gates joined RCA's marine division in 1925.

Other Radiomarine service personnel shifts include the promotion of T. M. Gardner, formerly district manager at Portland, Oregon, to the post of Galveston service manager; Carl Roehm, formerly Tampa district manager, to Miami service manager, and the appointment of resident inspectors L. D. Conklin and A. S. Valdes at Portland, Oregon, and Tampa, Florida.

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Sealand Construction, Inc. Organized at Seattle

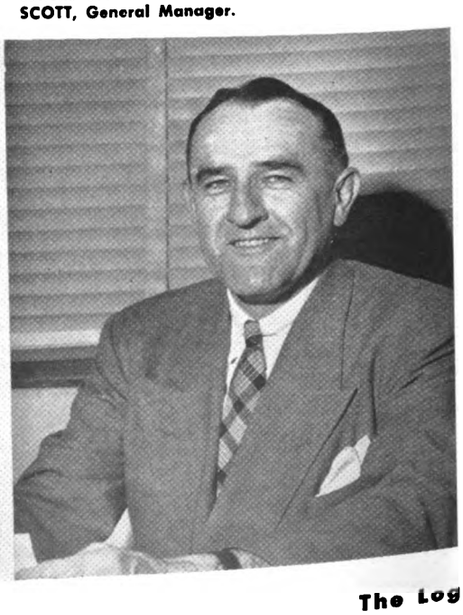
Charles M. Rohda, R. D. Egge and E. H. Cummins have announced their resignation from Puget Sound Bridge and Dredging Company, Seattle, and the formation of Sealand Construction, Inc., at Seattle, with Rohda as president, Egge as vice president, and Cummins as secretary treasurer. Rohda, formerly with Bethlehem Sparrows Point yard, was with Puget Sound Bridge and Dredging Company for several years, latterly as vice president and general manager of the shipbuilding division. Egge was chief estimator and assistant general manager, and Cummins was purchasing agent.

An early move of the new company was the purchase of five whaling vessels in layup at Seattle, adaptable either for scrapping or conversion, as an initial step in developing a ship repair and steel fabrication staff.

LESTER T. GATES, recently promoted to General Service Manager of Radiomarine Corporation of America.



Recently elected Vice President of the California Filter Company, San Francisco . . . CLYDE F. WILLIAMSON, formerly with the Hagan Corporation. Other officers of this company which designs and manufactures water softeners and filters for marine applications are PAUL F. BOVARD, President and E. C. SCOTT, General Manager.



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HAROLD KORTEGAARD, formerly a port engineer for the American President Lines, San Francisco, is now a sales and service representative for Wagner & Niehaus, marine repair company of that city. Another new addition to the Wagner & Niehaus staff is their boilermaker superintendent, Bill Holmes, who formerly was with United Engineering Co.

Paint Test with Aquaplast Results in Repeat Order

Ships of the American Mail Line operate on regular schedule between Columbia River and Puget Sound ports and Korea, Japan, China, the Philippines and India and sometimes touch at California ports.

The run via the Great Circle route to and from southern waters is a test for many things including hull paint. For paint tests, Frank H. Howard, marine superintendent, and G. J. Ackerman, operating manager, have cooperated with paint manufacturers. One vessel has gone out patch painted with products of several manufacturers, a patch or two to each manufacturer. To other ships one brand, and only one brand, has been applied, and that exactly according to manufacturers recommendations.

Valuable data for company records is being gathered as exampled by the experience with the mv ISLAND MAIL. On January 7, 1947, following sand blasting and phosphoric acid wash two coats each of Devoe Aquaplast anti-fouling and anti-corrosive cold sprayed plastic paint were applied to the ISLAND MAIL. She came out after 14 months in the water to result in Operating Manager Ackerman commenting: "The results were so satisfactory that decision was reached to repaint in kind." Frank Howard commented: "When she came out there was not a bit of growth on her. The finish was so smooth we didn't have to wash her off, everybody including the shipyard dockmaster and competitors marveled."

In January, 1949, the mv OCEAN MAIL was up for drydocking. With Colman Clark, Pacific Coast marine representative of Devoe and Raynolds, and representatives of Pacific Marine Supply Company, Seattle distributors for Aquaplast present, one coat each of Aquaplast anti-corrosive and anti-fouling was applied.

Todd Uses New Method For Hull Cleaning

In the instance of the OCEAN MAIL the ship was cleaned by a method developed by Todd Shipyards, the result of several years of experiment. The method uses sand and water under pressure rather than the conventional scraper and wire brush method. Owners, suppliers and manufacturers representatives agreed the method provides a scale free and cleaner surface for application of paint.

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Interest Growing in Seaboard Quick Opening Hatch Covers

In recent months American ship operators have been developing increasing interest in the Seaboard-Mege watertight, quick-opening hatch covers on the basis of their greater efficiency and safety over the pontoon type.

A comparative test held two months ago showed the Seaboard-Mege type required but one-sixth the time to open as was necessary for the standard pontoon type.

The test also showed that the Seaboard-Mege covers eliminate the nuisance of a lot of litter on deck, the steel pontoons, the tarpaulin covers, wedges and the battens which take up deck space and cause confusion.

The Seaboard-Mege watertight, quick-opening hatch covers are manufactured by the Seaboard Machinery Corporation, 29 Broadway, New York, N. Y.

Seaboard has also announced that in the past three years some 500 Liberty ship engine governors have been installed with only two known propeller losses, and in one case the governor had been disconnected.

⚓ ⚓ ⚓

General Electric Offers New Inert-Arc Electrode Holders

Six new electrode holders for the Inert-Arc process, one for machine welding and five for manual welding, have been announced by General Electric's Welding Divisions.

Inert-Arc welding is the process which makes it easier to weld "difficult" metals, such as aluminum, magnesium, stainless steel, copper, Fernico, Inconel and many others, without flux, free from oxidation, and with minimum distortion.

The manual holders are available in 100-, 200-, 400- and 800-amp ratings, and the holder for machine welding in ratings of 400 and 800 amps.

The new electrode holders for manual welding are: a 100-amp air-cooled model with spring-type collets, metal nozzle, and gas-tight, heat-resistant gasket; 200- and 400-amp water-cooled models with split-copper collets, ceramic nozzles, and gas-tight, heat-resistant gaskets; a 400-amp model with integral water-cooled metal nozzle, furnished with tips of two orifice diameters; and an 800-amp model furnished with one electrode assembly for each size listed and with three water-cooled metal nozzles, one for 5/16- and ⅜-in. electrodes, one for 7/16-in. electrodes, and one for ½-in. electrodes.

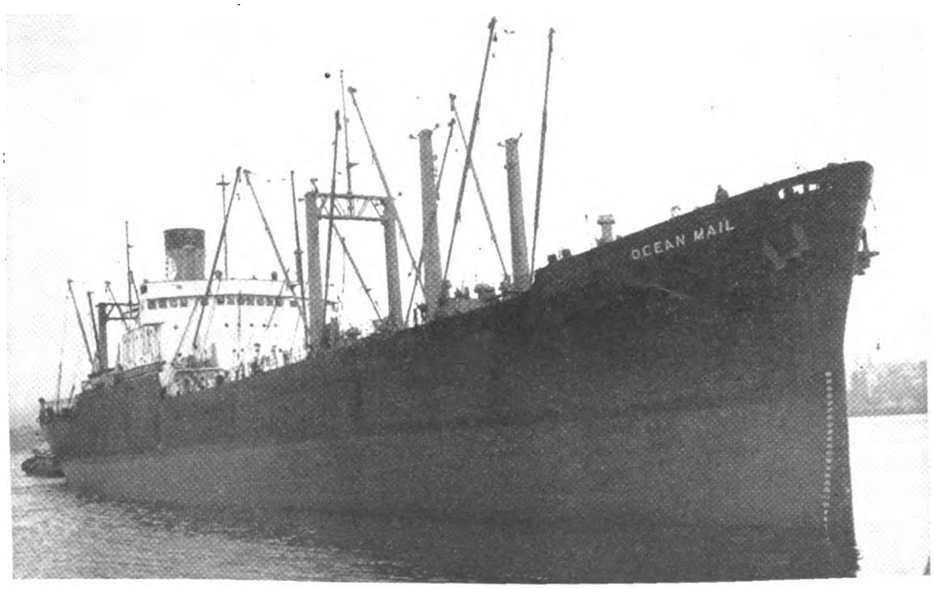
For machine welding the new 400-amp water-cooled electrode holder comes furnished with one piece of each size of tungsten and one set of collets for each size. With this holder the electrode may be adjusted while welding, and both the electrode and collets may be changed without removing the nozzle.

The 800-amp water-cooled holder for machine welding is furnished with one electrode assembly and nozzle for each size of electrode. With this model, too, the electrode extension may be adjusted while welding.

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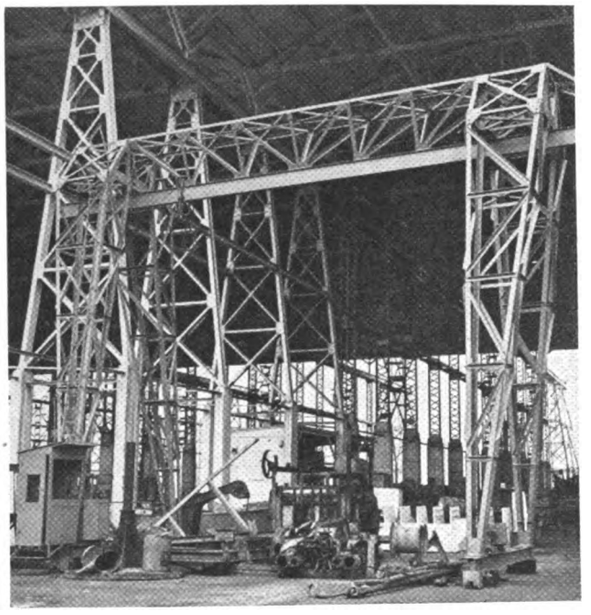
Earl R. Uhlin, well-known in Los Angeles-Long Beach marine circles, is now with the J. M. Costello Supply Co., Wilmington, Inc., Wilmington, handling the marine products of the Worthington Pump & Machinery Co. Mr. Uhlin was a marine engineer for 16 years on the Catalina Island steamers and, during the war, was with the San Pedro yard of Western Pipe & Steel Co. as a machinery blacksmith and shop superintendent.

AMERICAN MAIL LINE'S STEAMER OCEAN MAIL, which was painted recently with Devoe and Raynolds' Aquaplast plastic paint after her hull was cleaned by a new sand and water system at the Todd shipyard in Seattle.



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Length on track—20'0"

Traveling speed—150 feet per minute

Drive—2-Gear drive motors 2 hp each

Hoists—Ten ton hand

Weight—Approximately 25,-000 lbs.

Motors—AC 440V, 3 phase, 60 cycle

Height of lift—30 ft.

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Portable . . Bolted leg connect.

Cab—Ground level with push button control

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Design—Originally for handling steel and lumber

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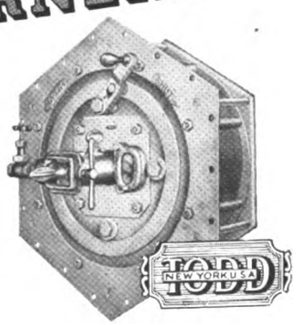
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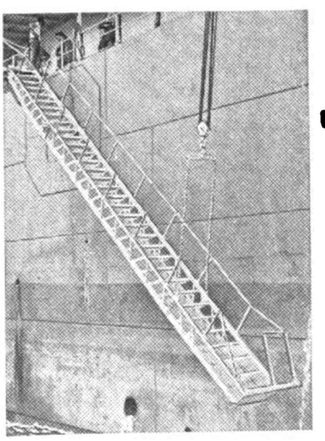
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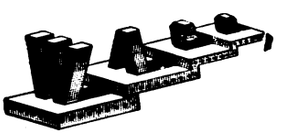


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New Orleans Firm Offers Specialized Ship Services

Early this year the Marine & Industrial Service Co., was organized in New Orleans to offer specialized repair service to ship operators in the area. With experienced personnel the firm provides all types of chemical cleaning of boilers, evaporators and condensers, fuel oil heaters, Diesel engine jackets, lubricating oil systems and tanks, cleaning and scaling of ships' hulls and barges; parts and repairs for all types of oil burners and galley ranges.

John S. Amos, Jr., is general manager and engineer, and Thomas M. McGinn, Sr., is office manager of the Service Division. For several years Mr. Amos served with the Mississippi Shipping Co. as an engineer, and from 1942 until joining the Marine & Industrial Co. early this year, he was port engineer for the New Orleans Port of Embarkation.

Mr. McGinn came to the new company from the post of sales manager of Charles Ferran & Co., Inc., of New Orleans. Previously he was associated with Todd Galveston Dry Docks; Kane Shipbuilding Co. and the U. S. Maritime Commission in New Orleans.

Located at 429 Calliope St., the Marine & Industrial Service Co. is distributor in the New Orleans area for the entire line of Sumco Products, Inc., of Brooklyn, including Fuelkleen, Tubekleen, Heaterkleen, Aquakleen, Oilkleen and Sumco Suds. The firm employs the Sumco System of chemical cleaning of boilers and heat exchangers of all types.

The company also is distributor for Ray oil burners and Ni-Resist galley range tops.

⚓ ⚓ ⚓

Thos. Short Named Raytheon-Submarine Signal Dealer

Thomas A. Short Company, 245 Fremont Street, San Francisco, has been named a dealer for the Raytheon Manufacturing Company's Submarine Signal Division's Fathometer Jr. Cape Cod Navigator and its line of marine radio telephones. The Fathometer, Jr. is a well-known 100-fathom echo depth sounder used by commercial fishermen on both coasts. Submarine Signal also manufactures larger Fathometers which are available on lease or may be purchased.

A Raytheon 10-centimeter Pathfinder Radar was installed recently on the Brazilian Naval Training Vessel *Almirante Saldanha* when she visited San Francisco. The sale was consummated by Raytheon's International Division and the installation was made under the supervision of Victor Battani, service engineer, and G. R. Moore of Submarine Signal.

Recently a West Coast visit was made by James J. Tynan, general sales manager of Raytheon Manufacturing Co. of Waltham, Massachusetts, who called on the company offices in San Francisco, Seattle and Los Angeles.

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New Appointment for Johnson With Robt. G. Allen Pacific

John Cordes, Cordes Brothers, 34 Davis Street, San Francisco, vice president of Robert G. Allen Pacific Co., Inc., an-

(Continued on Page 72)

MARINE & INDUSTRIAL SERVICE CO., of New Orleans. . . left to right: JOHN S. AMOS, JR., General Manager and THOMAS M. McGINN, SR., Office Manager.

ERNIE JOHNSON, new District Manager in San Francisco for the Robert G. Allen Pacific Co. Inc.



RAYTHEON-SUBSIGNAL Personnel and Installation. . . . Left to right: E. J. ROME and VICTOR BATTANI, San Francisco, and JAMES J. TYNAN, Waltham, Mass., of Raytheon Manufacturing Company. Center: WILLIAM F. DOLEZAL, District Manager for Raytheon's Submarine Signal Division at Seattle. Right: Installation of Raytheon Pathfinder Radar aboard the Brazilian Naval Training Vessel ALMIRANTE SALDANHA at San Francisco.

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NEW ORLEANS

FOR

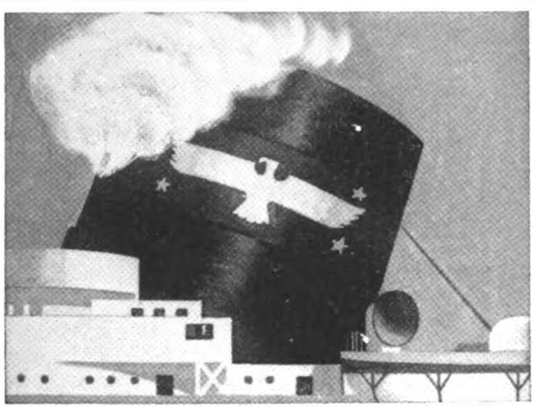
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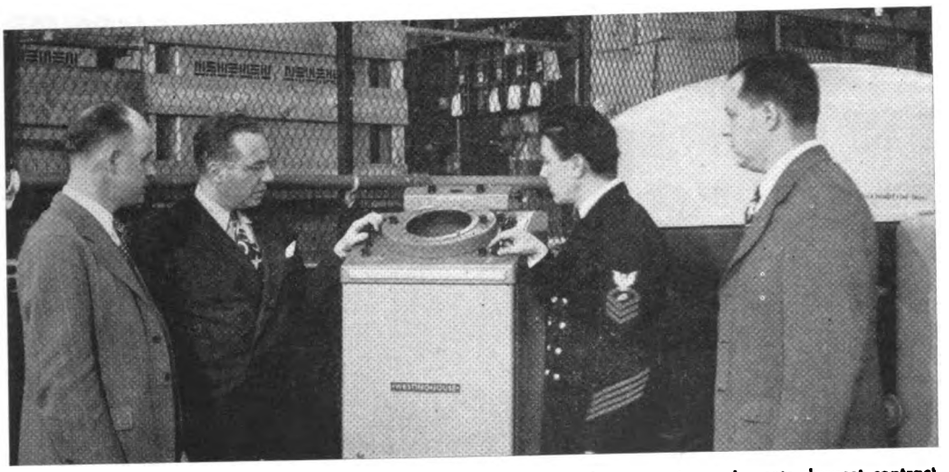
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WESTINGHOUSE RADAR COAST GUARD BOUND—First of 60 Westinghouse marine radar sets—largest contract ever awarded by the U. S. Coast Guard for this type of equipment—receives a final inspection by Chief Electronic Technician F. R. CALEWARTS prior to shipment from the Westinghouse Electronics plant, Baltimore, Md. The new radar equipment will be used by the Coast Guard on vessels performing vital shipping services on coastal waters, inland waterways and the Great Lakes. Looking on as Chief Calewarts makes final tests are (left to right) H. D. MORELAND, Division Sales Manager, F. W. FISCHER, Supervisor of Communication Sales, and COLEMAN LONDON, Section Engineer.

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New Appointment for Johnson With Robt. G. Allen Pacific

(Continued from Page 70)

nounces the appointment of Ernie Johnson as district manager for the Allen Company at San Francisco.

Mr. Johnson, who began his marine engineering career with the old Admiral Line years ago, recently was port engineer for Pacific Tankers in New York and San Francisco and later served in the same capacity for Hillcone Steamship Company on the Gulf of Mexico and Los Angeles harbor. His headquarters are at the Cordes Brothers address, San Francisco.

Ernie specializes in handling the Allen products, namely: Allenite Soot Eradicator; Allenshine Metal Polish; Allencote Chrome Ore Refractory Coating; Dualene Fuel Oil Treatment; Mulsivex Degreasing Solvent and Scaletex Scale Solvent.

Leslie Co. Introduces New Air or Water Operating Valve

A new self-sealing air or water operating, ball type valve, known as Type BA-1, has just been announced by Leslie Co., 347 Delafield Avenue, Lyndhurst, New Jersey, manufacturers of pressure and temperature regulators and controllers, strainers and whistles.

The valve is fitted with a quick-opening lever which may be adjusted to any horizontal position. The company reports the ball valve closes tight with inlet pressure and will not collect dirt or other foreign matter.

The stem is sealed by an O-ring not accessible to tampering or adjustment and eliminates a stuffing-box. It is self-packed by the operating pressure when the valve is open, permitting flow. The valve is suitable for use with air, water, and other fluids of a non-corrosive nature up to 200 psi pressure and temperatures up to 150°F. air and 180°F. water for many services where fast, positive action and tight closing are necessary.

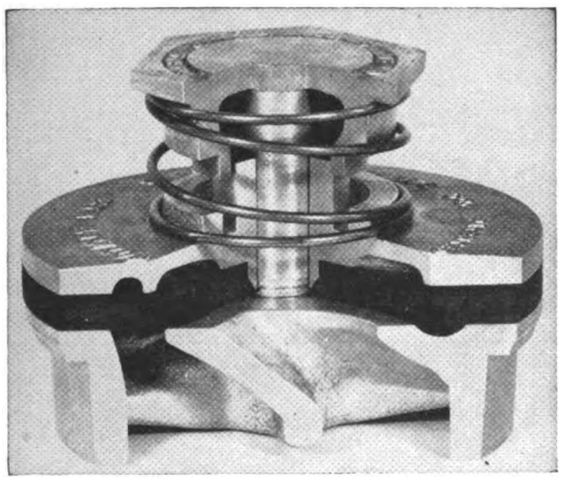
The valve is constructed with cast semi-steel body, integral rubber seat insert, screwed connections, ½" size, can be bushed to ¼" or ⅜".

According to the Leslie Co. the valve is ideally adapted to these services as an operating valve; for air whistles, for control of pneumatic cylinders on lifts, hoists, presses, etc., for cleaning air blasts on forging hammers, as a small valve for general service in machine, repair, railroad shops, etc., as a small valve for control of flushing liquids, and as a quick operating shower valve for emergency showers in chemical plants, etc.

Captain Nicholas P. Kane, formerly marine superintendent at San Francisco for the American-Hawaiian Steamship Co., is now with Smith-Rice Derrick Barges, Inc., at Long Beach. Captain Kane retired recently after serving American-Hawaiian more than 45 years.

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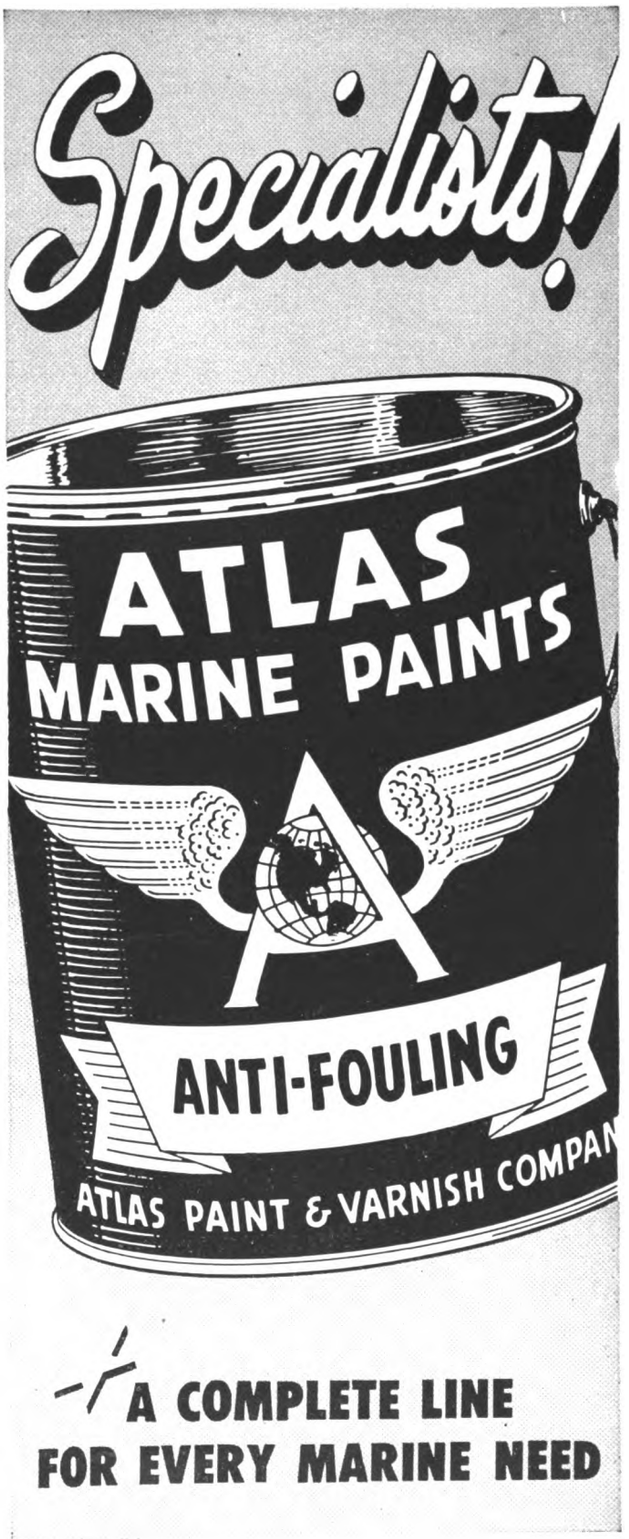
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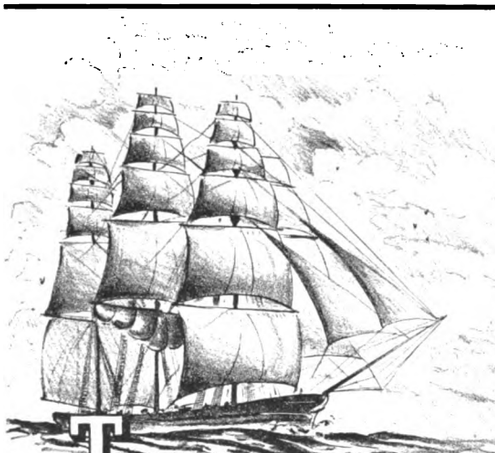
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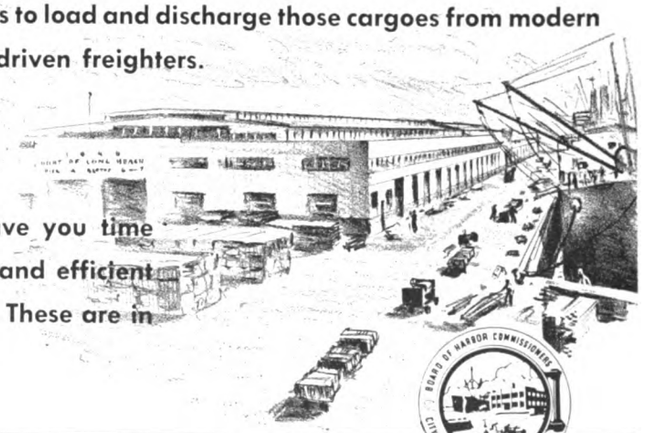
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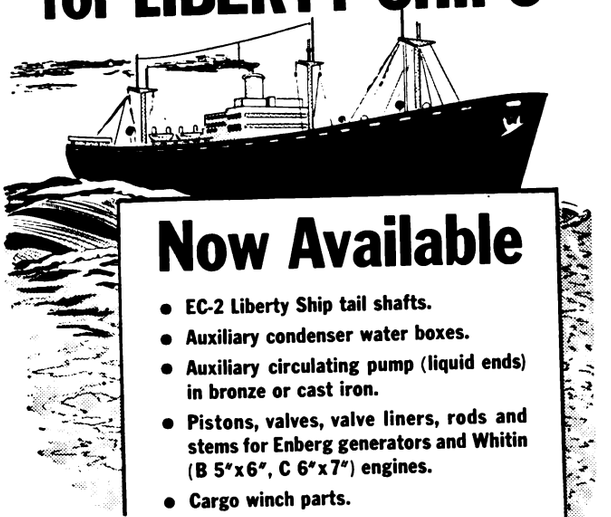
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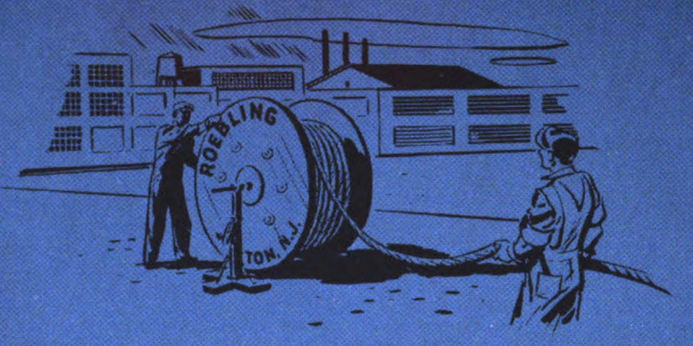
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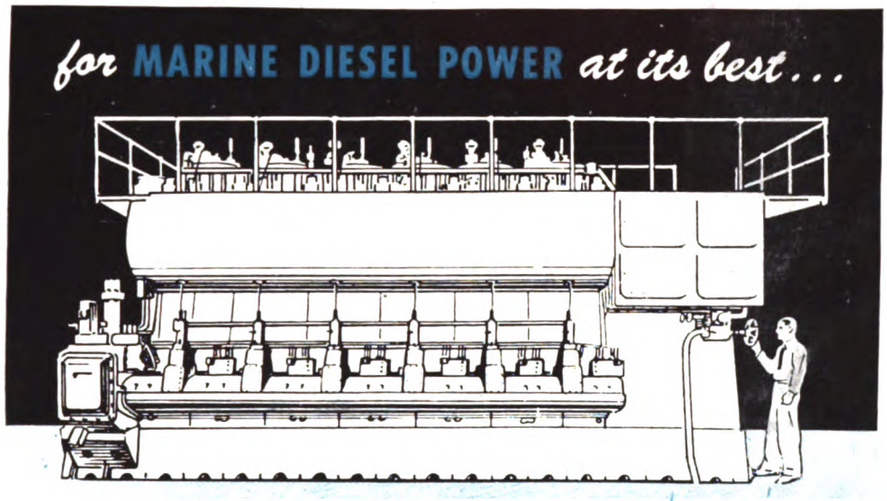
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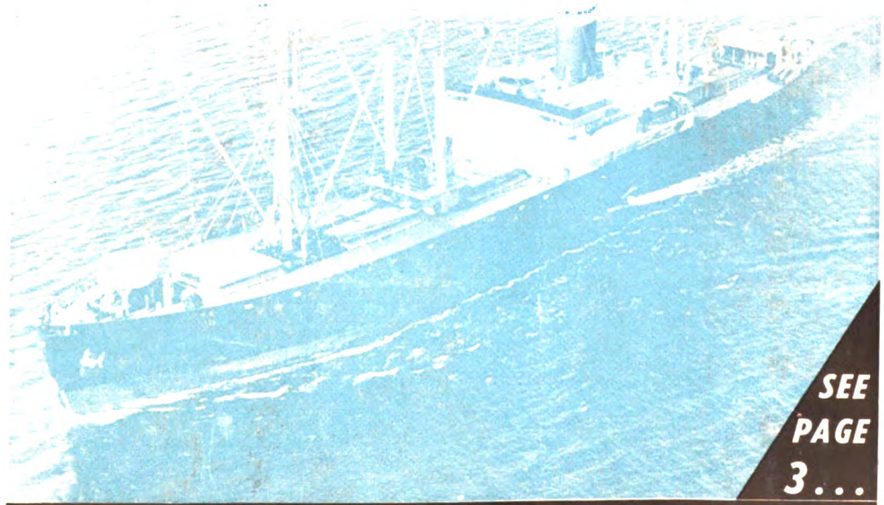
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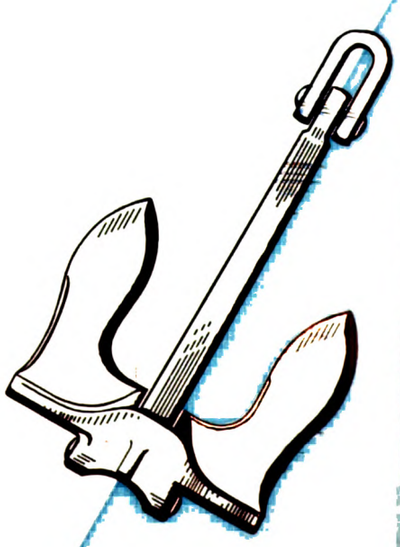


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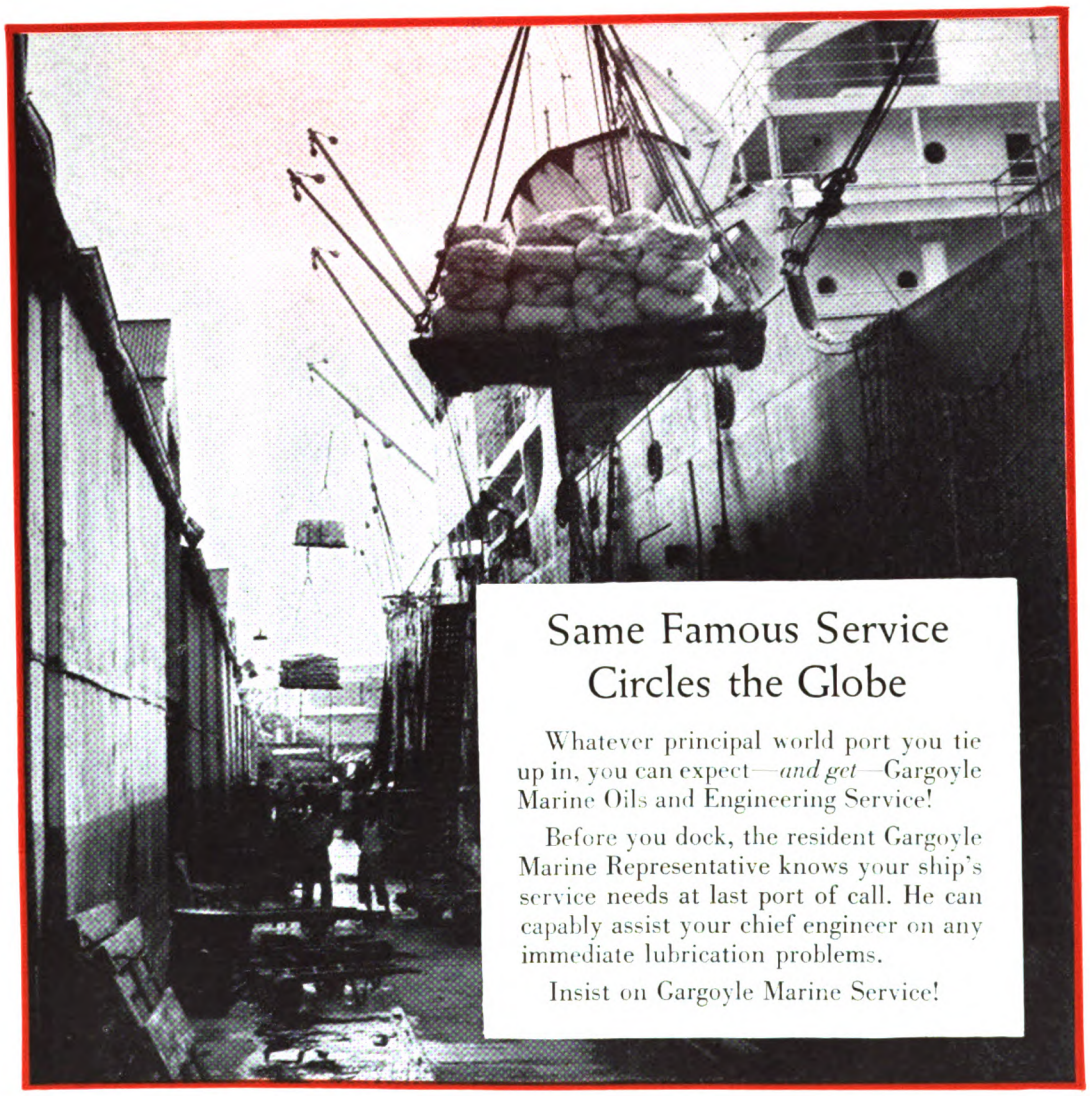
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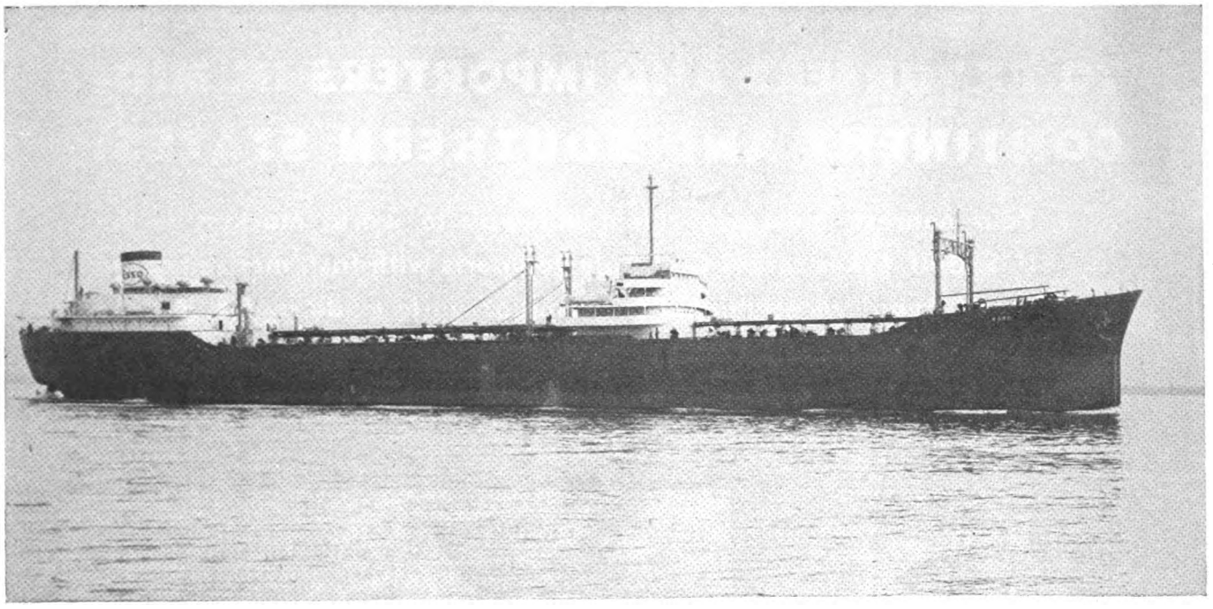
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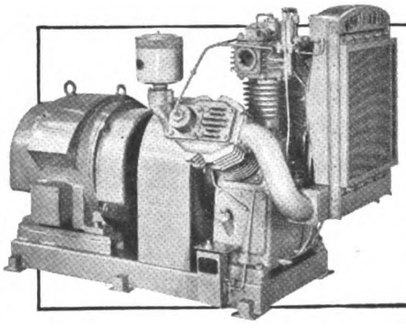


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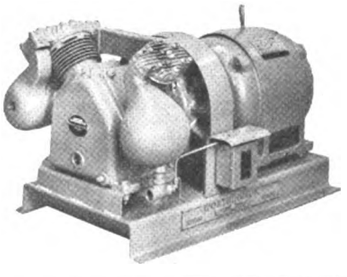
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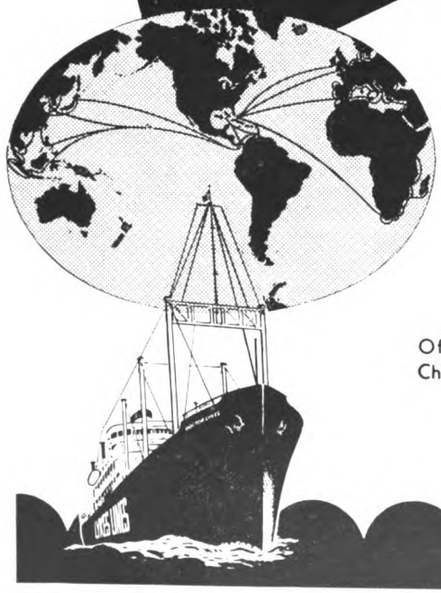
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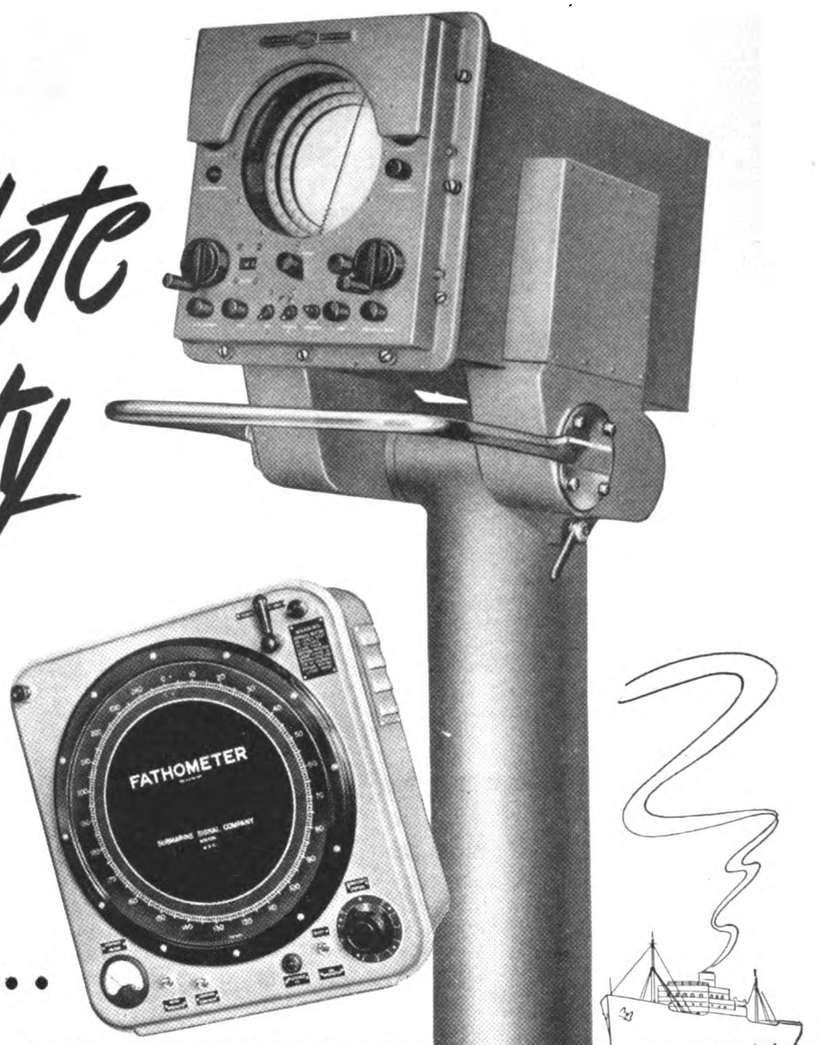
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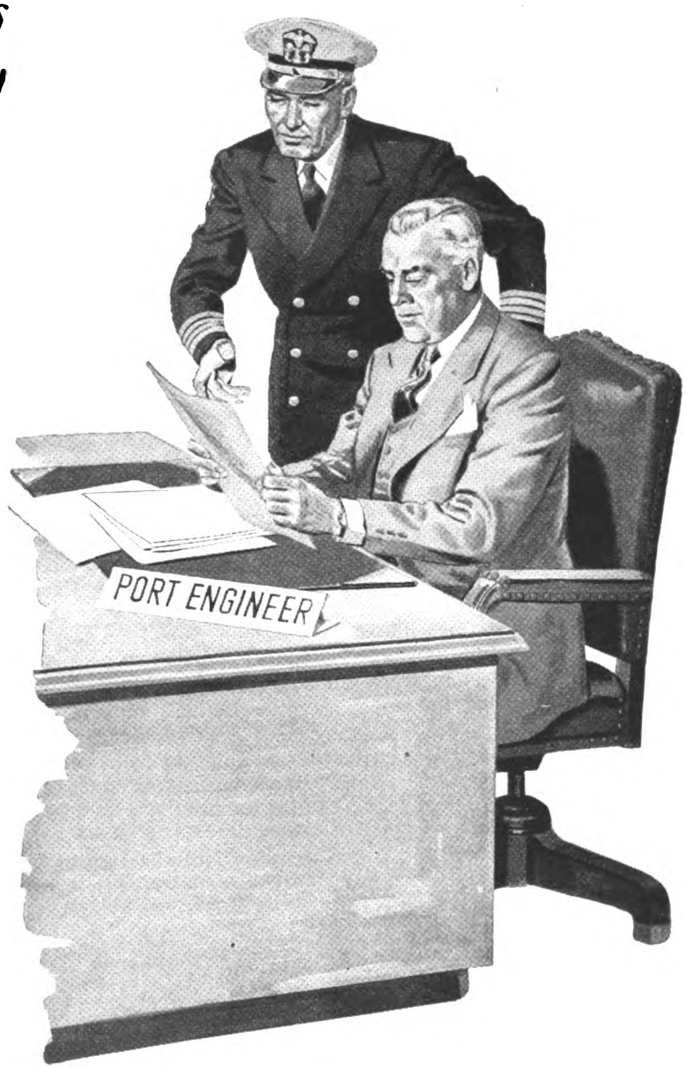
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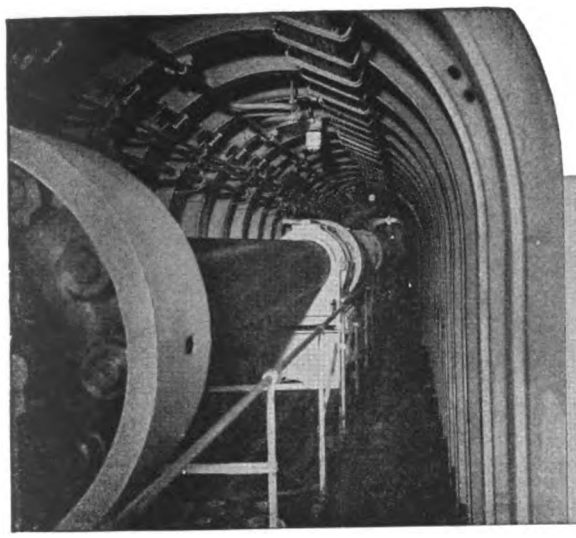
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SHAFT ALLEY Chatter

Lykes Quarter Century Club Holds First Annual Meeting

W. H. Hagan, district manager of Lykes Bros. Steamship Co., Inc., at Mobile, Alabama, was elected president of the Lykes Quarter Century Club at its first annual meeting in Lake Charles recently. He succeeds Captain Neal S. Storter, Lykes Lines operations manager of Galveston.

Other officers elected were Joseph A. Torregrossa, Galveston, vice-president; Miss Sidonia Kraft, New Orleans, secretary; Robert P. Grigg, New Orleans, treasurer, and Charles Andreason, Houston; George W. Hill, New Orleans, and A. J. Aberle, Lake Charles, members of the Board of Governors.

The Lykes Quarter Century Club was founded a year ago by J. T. Lykes, Tampa, president of Lykes Bros. Steamship Co., Inc.

Of the 41 original charter members, 25 attended the first annual meeting. Two others, Mrs. Florence George of Houston, and Max Eisenbach of Galveston, were admitted to membership during the annual meeting.

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Capt. Theobald Rejoins Alcoa As Assistant to President

The Alcoa Steamship Company announced that Captain Frederick C. Theobald has rejoined the steamship line at its main office in New York, as assistant to the president. Captain Theobald, formerly Alcoa's marine superintendent, returns after a leave of absence which began in 1946.

The new assistant to the president is familiar with the Alcoa organization, having served as its marine superintendent from 1939 to 1946. With a background of twenty-five years experience in U. S. shipping, Captain Theobald's name is well known in maritime circles, particularly in the New York and Gulf areas.

His new appointment brings Captain Theobald back to a career which began when he was fifteen years old. From his home in London, England, he first went to sea on square-rigged ships which tramped the sea-lanes of the world. By the age of eighteen he had circumnavigated the globe three times, and at twenty-two had his master's papers and first command.

During World War I, he commanded ships for the U. S. Army Transport Service, with headquarters at Brest, France. In 1919 he came to live in the U. S., and for the next several years was a master with the Cuyamel Fruit Company, then in the Caribbean trade.

Captain Theobald "swallowed the anchor" in 1930 when he joined the Redwood Line as its operating manager. He remained with that line (which later became the Gulf-Pacific Company) until 1939. In that year he accepted an appointment as marine superintendent with Alcoa.

As marine superintendent, he was kept busy with an Alcoa fleet which grew from some thirty ships in 1939 to ninety-three ships in 1945. In 1946, the strain of war years past, Captain Theobald elected to take a leave of absence, and for the past three years he has been living in British Columbia, Canada.

⚓ ⚓ ⚓

Joseph Dela Pina has been named assistant Pacific Coast manager of States Marine Corporation, succeeding Carl Culver, who will remain in Japan for the line. Mr. Dela Pina is known to Pacific Coast shipping as he was with American-Hawaiian Steamship Co. in New York before the war.

REJOINS ALCOA STEAMSHIP COMPANY . . . CAPTAIN F. C. THEOBALD, formerly Marine Superintendent and now Assistant to the President of the company.



Pacific Transport Names Traffic Man New V. P.

R. A. McLaren, president of Pacific Transport Lines, San Francisco, announces the appointment of George E. Talmage as vice president, effective July 1.

Mr. Talmage is a widely-known shipping executive and before World War II was freight traffic manager of the Panama Pacific Line, which operated the ss CALIFORNIA, VIRGINIA and PENNSYLVANIA between California and east coast ports. During the war Mr. Talmage was with Lend-Lease Administration, the War Shipping Administration, the Interstate Commerce Commission and later was special adviser to the United States Maritime Commission administering its program for rehabilitation of private coastwise, intercoastal and territorial shipping.

Recently Mr. Talmage has been executive vice president of Ajax World Wide Freight Corp., which serves as eastern general agents for Pacific Transport.

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Grace Makes New Appointments and Transfers

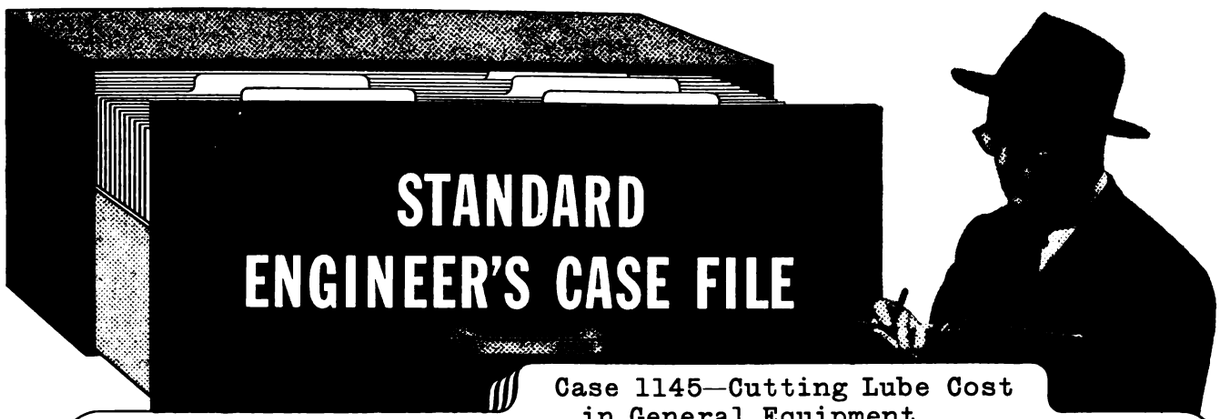
R. A. Shiner has been transferred from the Washington, D. C., office of the Grace Line to Los Angeles to succeed William A. St. Amant as manager.

Mr. St. Amant is moving to New York to assume additional responsibilities in the Grace office there. He has been with the company 22 years and manager at Los Angeles since 1944.

Mr. Shiner has been with Grace for more than 14 years and was assistant passenger traffic manager at New York and had charge of the line's activities in Washington.

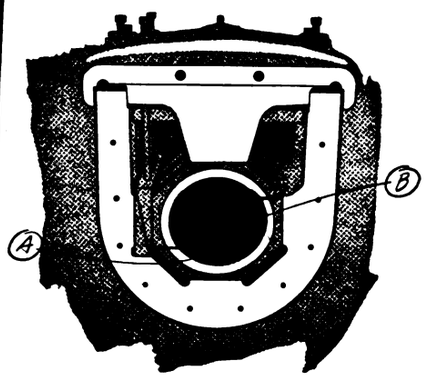
W. R. Grace & Co. announces the appointment of E. Russell Lutz as manager of its Washington office. Mr. Lutz until recently was vice president for foreign administration of the American President Line. Before entering the steamship business, Mr. Lutz, an attorney, was in government service. From 1926 to 1937 he was with the State Department; from 1937 to 1941 he was with the United States Maritime Commission, serving two of these years as its assistant general counsel.

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STANDARD ENGINEER'S CASE FILE

Case 1145—Cutting Lube Cost in General Equipment



AIR COMPRESSOR MAIN BEARING

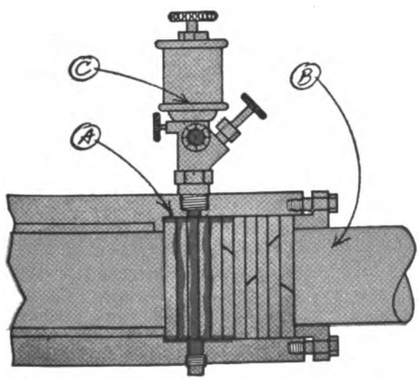
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Case 1144—Maintaining Oil Film in Refrigeration Machines



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SHAFT ALLEY (continued) Chatter

American Export Appoints General SS West Coast Agents

General Steamship Corporation, Ltd., has been named Pacific Coast general passenger agent for the American Export Lines and Frank E. Short, since 1936 district representative at San Francisco for American Export, has been appointed general passenger agent for General Steam. Mrs. Short, who was with her husband in the Export Lines' office at San Francisco, has moved with him to General Steam.

In addition to its new "Four Aces" on the Atlantic, American Export has chartered the ss LAGUARDIA and is general agent for the Italian Lines' liners, SATURNIA and VULCANIA. American Export, too, is building two 20,000 ton, 1,000-passenger, 25-knot passenger liners, the INDEPENDENCE and the CONSTITUTION, at the Bethlehem Quincy shipyard.

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Capt. Frederick H. Fowler, formerly master of American-Hawaiian and Weyerhaeuser vessels, has joined the operations staff of the Canadian Gulf Line in San Francisco.

New York Surveyor Visits At Pacific Coast Ports

Captain H. J. Parker, chief surveyor, Board of Underwriters of New York, was a visitor to Pacific Coast ports in May. A former master of American Hawaiian vessels in the intercoastal trade, he attended the National Fire Protective Association meeting at San Francisco and then traveled North to study conditions in the North Pacific area and for visits with friends in the area.

⚓ ⚓ ⚓

Raymond J. Coyne has returned to his former post as superintendent marine engineer of the United States Army Transport Corps at Fort Mason, San Francisco, succeeding Philip H. Thearle, resigned. Mr. Coyne recently was superintendent of the marine repair shops there.





GE PARTY FOR CAPTAIN SULLIVAN

Left: HARRY M. BARDIN, Manager Marine Sales, General Electric Co., New York; CAPTAIN WILLIAM E. SULLIVAN, Supervisor of Shipbuilding, USN, New York, Honor Guest; DAVID McCULLOCH, Vice Chairman of the Board, Foster Wheeler Corp., New York.

Left: REAR ADMIRAL CARL E. HOLDEN, USN, Commandant U. S. Naval Base, Brooklyn, N. Y.; COMMODORE EDMUND E. BRADY, USN (ret.) George G. Sharp, Naval Architect, N. Y.; REAR ADMIRAL F. E. HAEBERLE, USN, Commandant, New York Naval Shipyard, Brooklyn, N. Y.

Lower left: R. W. ERICKSON, Electrical Engineer, Gibbs & Cox, Inc.; HARRY BARDIN; WILLIAM N. ZIPPLER, Chief Electrical Engineer, Gibbs & Cox, Inc.

Below: CHARLES H. GROSS, Marine Sales Engineer, General Electric Co., N. Y.; RICHARD H. DAVIS, Assistant Manager, Marine Division, Worthington Pump & Machinery Corp., Harrison, N. J.

In honor of Captain William E. Sullivan, USN, supervisor of shipbuilding, New York, the General Electric Company held a cocktail party in the penthouse of their New York building on May 18th.

The occasion was Captain Sullivan's transfer to the post of Commander, Long Beach Naval Shipyard, Long Beach, California, where he assumes his new duties July 5th.

Host for the party was Harry M. Bardin, manager, Marine Sales in New York for General Electric. The guests included many of Captain Sullivan's Navy associates and civilian friends among naval architects, shipbuilders and equipment manufacturers. Some of those present to honor Captain Sullivan are pictured at the left and below.

Below: REAR ADMIRAL T. P. WYNKOOP, USN (ret.) President, Radiomarine Corp.; CAPTAIN D. C. REDGRAVE, USN, Head, Material Laboratory, U. S. Naval Shipyard, Brooklyn, N. Y.; COMDR. OLIVER D. COLVIN, USN (ret.) President, Cargocaire Engineering Corp., N. Y.; EARL K. HENLEY, Manager, Marine Division, Aircraft Federal and Marine Divisions, General Electric Co., Schenectady, N. Y.



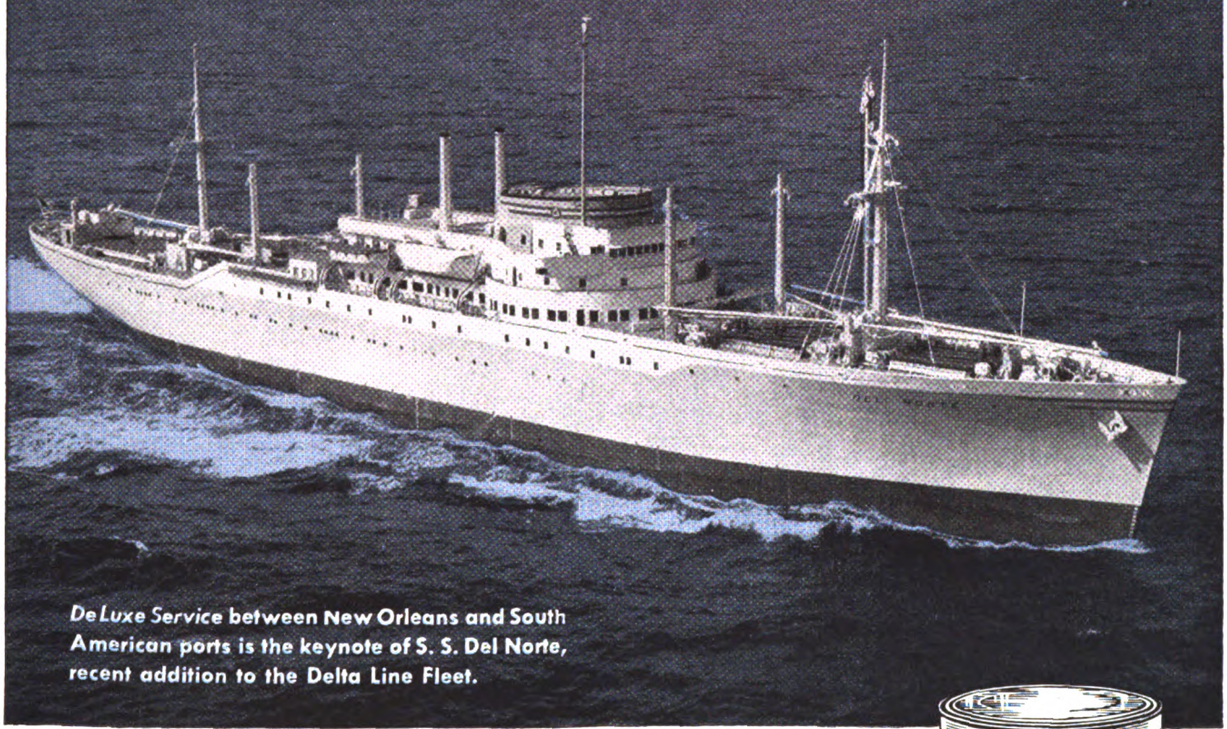




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SHAFT ALLEY (continued) Chatter

New York Propeller Club Elects Sparrell President

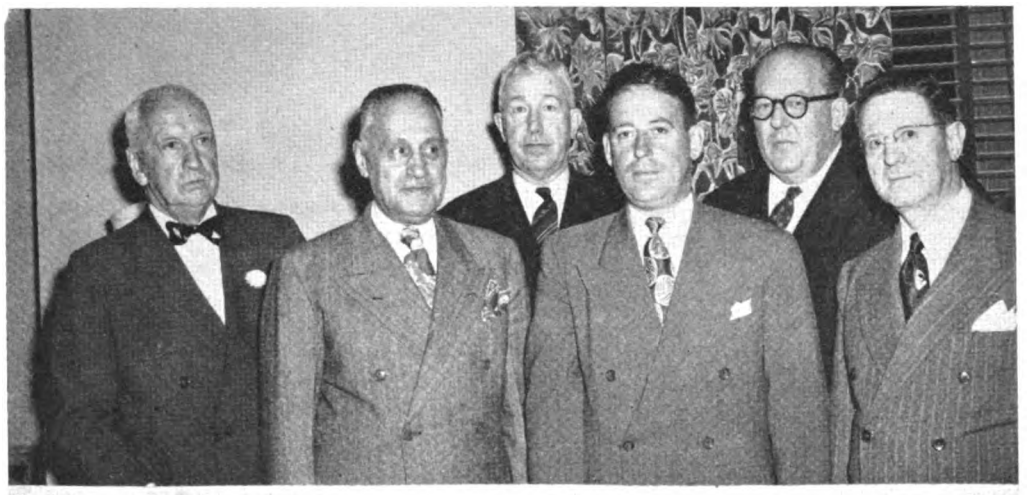
New York, June 2.—L. S. Sparrell, manager of ship repair sales, Bethlehem Steel Company, Shipbuilding Division, last month was elected president of the Propeller Club of the United States, Port of New York, for the 1949-50 term.

Mr. Sparrell's election was announced after the annual meeting of the organization at the Downtown Athletic Club. He succeeds Harmon Lewis, of Marsh & McLennan, who served as president for the 1948-49 term.

Raymond M. Hicks, executive vice president of the United States Lines, was elected vice president to succeed Mr. Sparrell, who served in that capacity during the past year. Julius C. Manzi, of John H. Wells, Inc., was reelected secretary and John G. Thompson, of Thompson Marine Supply Corp., was reelected treasurer.

Governors elected for the three year term ending in 1952 were: Hon. James J. Murphy, congressman from the 16th Congressional District; C. J. Pannill, consultant; Henry F. Markwalter, assistant general manager of the Luckenbach Steamship Company; W. H. Griffin, vice president of the Alcoa Steamship Company; and Lewis A. Lapham, president of the American-Hawaiian Steamship Company. Maynard A. Laswell, vice president of the CO Two Fire Equipment Company, was reelected to the board for the two year term ending in 1951.

Election of officers for the Propeller Club, Port of New York, saw (left to right) RALPH R. PIPER, Bethlehem Steel Company, Shipbuilding Division, elected to the Board of Governors; JULIUS C. MANZI of John H. Wells, Inc., reelected Secretary; HARMON LEWIS of Marsh & McLennan, retire from the presidency; L. S. SPARRELL, Manager of Ship Repair Sales, Bethlehem Steel Company, Shipbuilding Division, elected president, LEWIS D. PARMELEE, former president of the New York organization; and JOHN G. THOMPSON Marine Supply Corp., was reelected treasurer.





PORT OF SAN FRANCISCO holds reception for eastern visitors. Left to right: D. J. CODDAIRE, Washington, D. C., United States Maritime Commissioner; E. H. HARMS, Pope & Talbot Lines, president of the San Francisco Propeller Club; E. F. HOFFMAN, American President Lines; secretary of the club; MRS. and MR. L. B. PATE, New York, Seas Shipping Co. and EVAN RINEHART, New York, manager of the marine industry department of the Johns-Manville Sales Corporation. Mr. Pate is president of The Propeller Club of the United States.

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LA Propeller Club Elects New Officers

Norman E. Dunnavant, editor and publisher of the Daily Shipping Guide, was the unopposed candidate for the presidency of the Port of Los Angeles of The Propeller Club of the United States. The election was scheduled for June 22.

Other nominees were: first vice president, W. A. St. Amant, Grace Line; second vice president, T. G. Maddox, Los Angeles Harbor Department; third vice president, Lawrence Wolff, Union Oil Co. and secretary-treasurer, Howard W. Woodruff, Marine Exchange.

For the board of governors the candidates for three year terms were: E. J. Amar, Long Beach Harbor Department; Harold A. Black, admiralty attorney and retiring president; Ralph J. Chandler, Matson Navigation Co.; Leon C. Munson, Pacific Transport Line; A. P. Smith, Moore-McCormack Line and William G. Sheldon, Luckenbach Steamship Co.

Directors who continue in office are: Alvin L. Allyn; Arthur Eldridge, Los Angeles Harbor Department; Edgar M. Wilson, American President Lines; Colonel Charles T. Leeds; Wm. Schroeder, Citizens National Bank; Lawrence Wolff; Rear Admiral L. L. Bennett, USN (ret); N. E. Dunnavant; T. G. Maddox; J. C. McHose, attorney; W. A. St. Amant and L. K. Vermille, attorney.

It was expected Mr. St. Amant would resign his candidacy as he is being transferred to the New York office of the Grace Line to be succeeded as Grace manager in Los Angeles by R. A. Shiner.

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U. S. Lines Ships First Heifers to Germany

The United States Lines freighter AMERICAN IMPORTER took out the first shipment of 70 heifers to be sent to Germany under the auspices of the Heifer Project Committee, an American interfaith organization for rehabilitation of displaced persons and war refugees who have resettled in countries throughout the world. The heifers, which will be assigned to individual families who have been relocated on farm lands, are given to the Project by American farmers and are good quality pure bred animals of leading dairy breeds.

Approximately 8000 heifers have already been sent to deserving families in countries where war refugees have settled or where herds have been destroyed by war. The countries served so far include Greece, Mexico, France, Belgium, Italy, China, Japan, Okinawa, Ethiopia, Austria, Ecuador and Puerto Rico. The cattle have been donated by the farmers of Pennsylvania, Ohio, Indiana, Illinois, Kansas and Wisconsin. Western States are now organizing collection centers.

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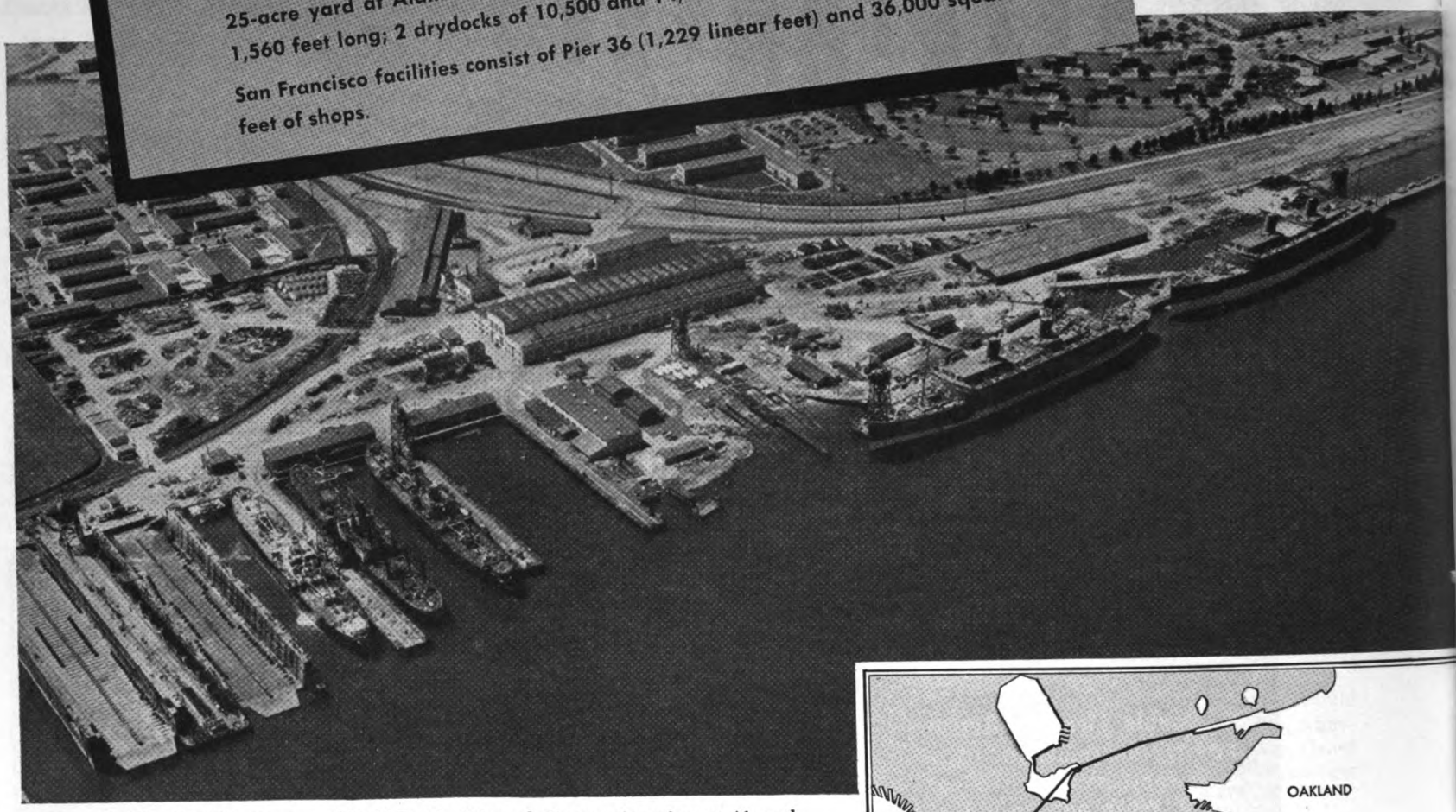
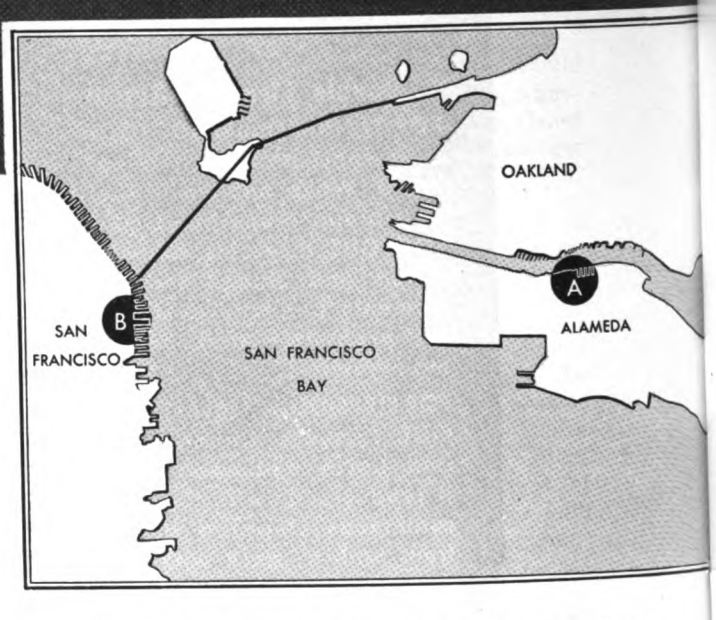


PHOTO ABOVE—Airview of Todd Pacific Shipyards Corporation plant at Alameda.



AREA A—Alameda yard, on San Francisco Bay, diagonally across from the Golden Gate.

AREA B—Pier 36 and Beale Street shops, on San Francisco's Embarcadero.

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JULY, 1949 Vol. 44, No. 7

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Union Oil Co. Announces Plans to Rebuild Tankers

Captain John B. Stene, Los Angeles, manager of marine operations of the Union Oil Co., announces his firm has set up a progressive program for building tankers to replace ships of its present fleet as they are retired. No definite number has been decided on, but preliminary estimates are for possibly five.

The vessels will be turbo-electric, with the auxiliaries all powered by electricity. They will be of approximately 16,500 tons each, 16-knot speed, with capacity for around 140,000 barrels of petroleum products and will cost about $4,500,000 each.

It is planned to build one vessel at a time, each taking about 20 months for construction. Bugs will be ironed out of the first ships in actual operation before the next jobs are started.

An unusual feature will be the fact that the main cargo pumping will be done from pump rooms located aft and amidships, each handling approximately 14 different products.

M. J. Ryan, San Francisco naval architect, and U. W. Hird, Union Oil Co. naval architect, are collaborating in designing the vessels. It is expected the call for bids will go out late in August.

Union Oil has eight tankers in its present fleet. They are the ss L. P. ST. CLAIR, VICTOR H. KELLY, PAUL M. GREGG, A. C. RUBEL, SANTA PAULA, LOMPOC, OLEUM and the mv UNOBA. The SANTA PAULA, LOMPOC and OLEUM are T-2 vessels and the UNOBA is of Honduran registry.

California geographic names, yet to be selected, will be given the new tankers.

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Todd Begins Operations At New Houston Plant

Todd Shipyards Corporation has completed its first three jobs on vessels needing drydocking and voyage repairs, at its newly-acquired plant at Houston, Texas.

Todd purchased the yard from the Brown Engineering Co. in late April, and has been busy getting it ready for operations for a month. Immediately upon closing the deal, Todd's engineers and workmen started dredging the slips and under the drydocks, and rearranged and installed working facilities. The plant expects to repair vessels of all types which use Houston's fast growing port, and to build all manner of small vessels. Bids for new construction have already been submitted.

Todd was approved by the Navy Department as purchaser of the property, the Navy reserving their interest and estate in the property as a standby plant for a period of 20 years. Todd has agreed to keep the plant in a state of readiness in case of a national emergency.

This is Todd's second operation in Houston. During the war, Todd built Liberty ships at the Irish Bend site just across the Ship Channel from their present plant.

The deal called for leasing to Todd the major portion of Brown's plant, with about 3,000 feet fronting on the Houston Ship Channel and 6,000 feet on Green's Bayou.

The facilities include intensive pier and wharfage space, a full complement of utility and fabricating shops, and two drydocks. No. 1 drydock is 558′ long, 84′ wide, with a 24′3″ draft and lifting capacity of 10,500 long tons. No. 2 drydock is 351′ long, 63′3″ in breadth at the entrance, has a 20′ draft and lifting capacity of 3,000 tons. Both drydocks are served by 40-ton Gantry cranes with 35-foot radius.

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N. Y. Shipbuilding Lays Third Keel for APL Luxury Liners

The keel for the American President Lines' third new $12,000,000 luxury liner, the ss PRESIDENT HAYES, was laid May 20, at New York Shipbuilding Corporation, Camden, New Jersey. The date coincided with the observation of National Maritime Day in San Francisco, the home port of the new ship.

Only four passenger keels, excluding the HAYES, have been laid since before the war, and all four of these within the past two months. Two of these were the PRESIDENT JACKSON and PRESIDENT ADAMS, sisterships of the PRESIDENT HAYES, and the other two were for American Export Lines. It has been estimated that three times this number will be needed to restore the U. S. Merchant Marine to its pre-war levels.

The trio of American President Lines' new Round-the-World vessels will each have accommodations for 228 all-first-class passengers and more than a half million cubic feet of cargo space. They will be 536 feet overall, 73 feet beam, and cruise at 19 knots. All three are scheduled for delivery in late 1950.

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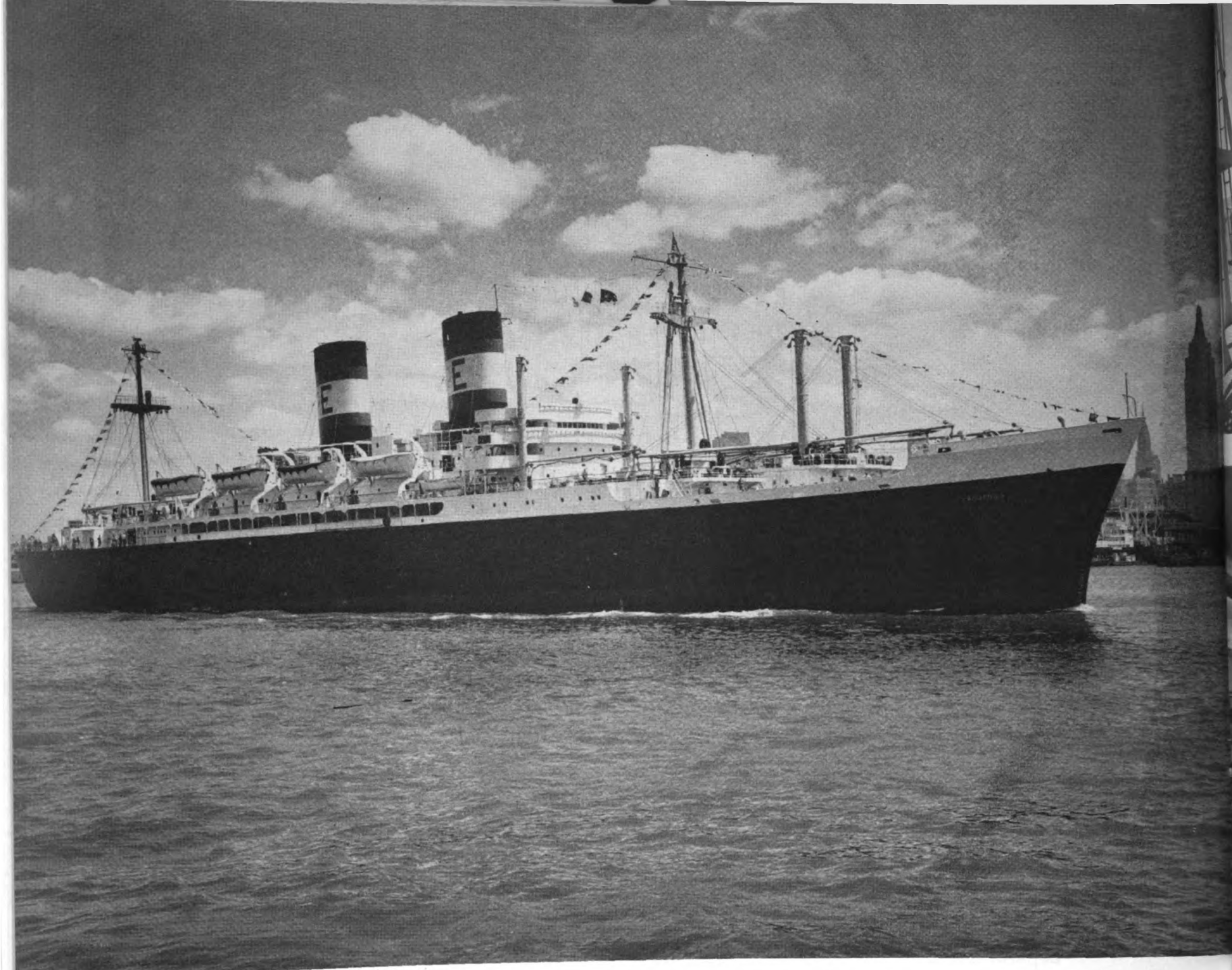
Pan-Atlantic Sets New Speedy Schedules

Officials of the Pan-Atlantic Steamship Corporation, wholly owned subsidiary of the Waterman Steamship Corporation, announced that new coastwise schedule adjustments from Atlantic Coast Ports to Mobile would now cut six days from the present transit time between the Port of New York and the Port of Mobile. The new schedules, utilizing Pan-Atlantic's speedy fleet of 10,700-ton Victory vessels, take a total of eight days transit time between the two Ports, against the previous schedule of 14 days.

This new service is served by the ss BESSEMER VICTORY, the ss CANTON VICTORY and the ss GREELEY VICTORY.

At the same time, Pan-Atlantic officials in Boston, Massachusetts, announced that for the first time since long before the War, southbound service between the Port of Boston and Mobile would be inaugurated. Pan-Atlantic officials stated that this increase in coastwise service was in line with the continued interest and post war development of domestic water carrier commerce between important industrial areas of the United States.

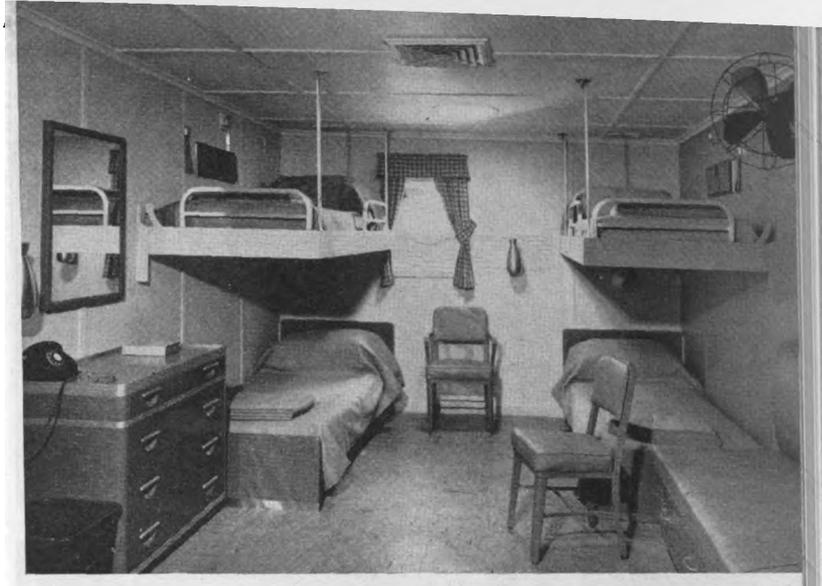
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SS LAGUARDIA . . .

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Plenty of open deck space for outdoor activities on the warm Mediterranean run is provided by the Sports Area on the LAGUARDIA'S sun deck (top).

Outstanding feature of the conversion work is the public rooms (bottom). Designed by the Martin-Parry Corporation of New York they are comfortable and pleasant.

First class accommodations range from two-berth to four-berth rooms as shown in the picture above (top).

The first class dining room (bottom) is in three sections, necessitated by the wartime layout providing two completely independent engine rooms. First class rates for the LAGUARDIA start at $385 for the peak season with a minimum rate of $350 during the off season. Corresponding tourist rates are $250 and $225.

The 18,000 ton passenger liner LAGUARDIA, originally constructed at the Federal Shipbuilding Yard, Kearney, New Jersey, in 1944, as a P-2 Army Transport GENERAL W. P. RICHARDSON, and converted for the Maritime Commission by Ingalls Shipbuilding Corporation of Pascagoula, Mississippi, this month went into the Mediterranean service of American Export Lines.

The twin screw, two-stack vessel is 622 ft. 6 in. long with a beam of 75 ft. 6 in. and presently accommodates 157 first class passengers and 452 tourist class passengers. Making a speed of 20 knots the ship will cross from New York to Naples on a ten day schedule.

The RICHARDSON, converted at a cost of $5,000,000, was renamed the LAGUARDIA by Walter Hamshar, marine editor of the *New York Herald Tribune,* in honor of the late Honorable Fiorello H. LaGuardia, Mayor of New York. Mrs. LaGuardia officially rechristened the ship at dedication ceremonies on deck at American Export's Pier 84, North River.

Captain Hugh L. Switzer, winner of the Merchant Marine Distinguished Service Medal for heroism in the North African invasion, is master of the new LAGUARDIA. Chief officer is Gordon D. McAllister, and chief engineer is Henderson Banks.

The LAGUARDIA will add 13,000 berths annually to the 72,000 now available for east and west passage on American Export Lines' new "Four Aces"—EXCALIBUR, EXOCHORDA, EXETER and EXCAMBION—and the Italian liners VULCANIA and SATURNIA for which the company acts as agents.

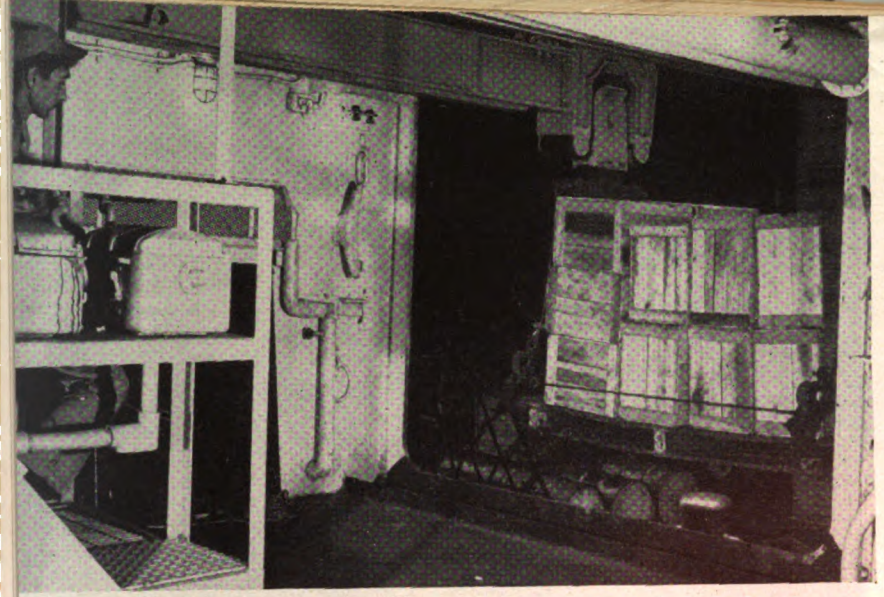
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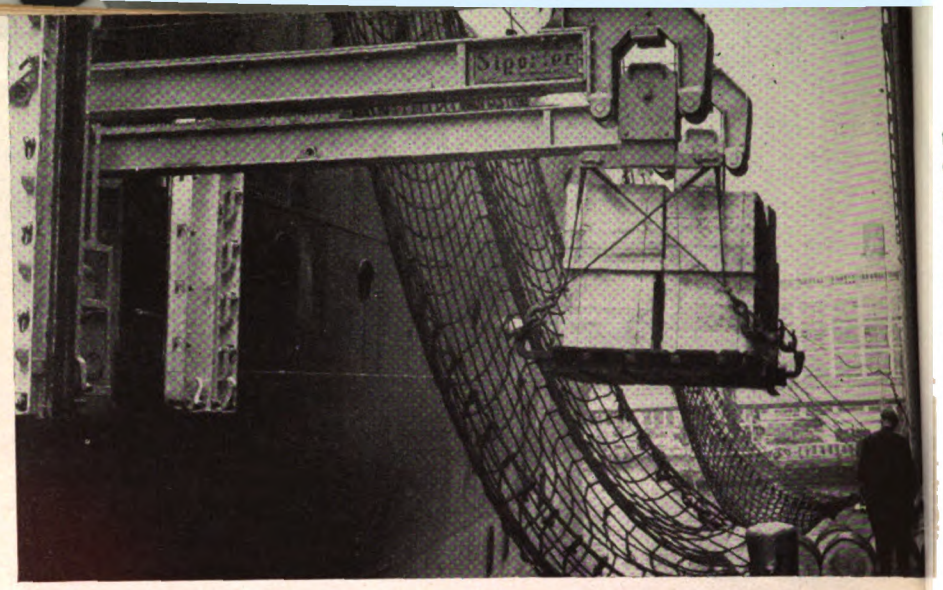
C. K. Howe, president of Weeks-Howe-Emerson Co., announces the election of J. J. Imhof as a director of the company. Mr. Imhof has been with the firm for more than a quarter of a century.

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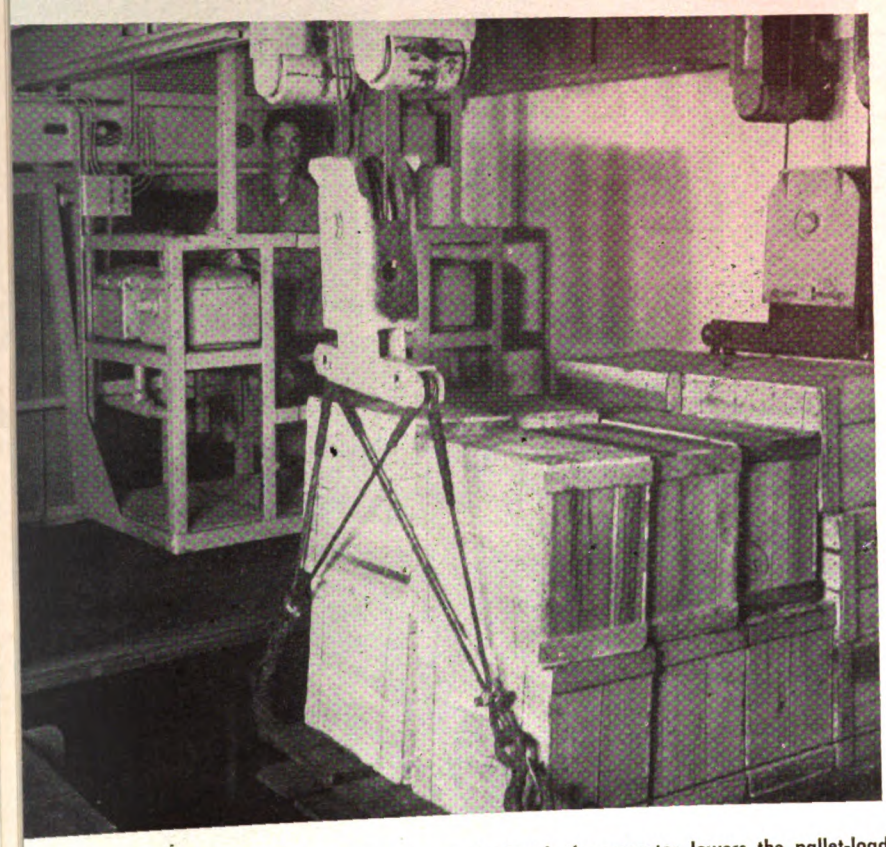
Four passenger-and-cargo motor-liners of 12,000 tons gross each are to be built by Vickers-Armstrongs, Ltd., for the Ellerman lines. The ships are to be used in the Ellerman and Bucknall service between the United Kingdom, Continental Ports and South Africa.

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New "trolley type" Siporter on the SS LAGUARDIA lifts a pallet of cargo from the dock to the boom (above). The operator then retracts the boom and starts the entire unit moving inside the ship simultaneously (left) back to a position over the hatch. Speed ratios of the boom and trolley are so designed that by the time the cab is in position to lower the load, the boom has been fully retracted.



With "Siporter" positioned over the hatch the operator lowers the pallet-load into the hold. The new "Trolley Type Siporter" is lighter than the previous "Extensible Boom" Model and averages about 30 round trips per hour.

SS LAGUARDIA GETS NEW TYPE SIPORTER

New "trolley type" installation on American Export Lines' latest passenger ship boosts side-port loading speed.

The Lake Shore Engineering Company of Iron Mountain, Michigan, designers and builders of the "Extensible Boom Type Siporter" which was installed on the American President Lines' PRESIDENT CLEVELAND and PRESIDENT WILSON, has installed an improved type unit aboard American Export Line's LA-GUARDIA.

This new improved type is known as the "Trolley Type Siporter." It will also be installed on American Export's two new liners now under construction at Bethlehem's Quincy yard, the INDEPENDENCE and the CONSTITUTION. Several other passenger liners now in the design stage are also considering this new type installation.

The "Siporter" is designed for handling cargo to blind holds through side ports on passenger vessels, or for use on any other types of vessels desiring side port operation.

It takes the place of older methods utilizing combinations of elevators, conveyors and trucks carrying cargo aboard vessels by means of ramps.

This new type of gear transports cargo in one operation directly from the dock to the hold of the ship with a capacity of 30 trips per hour. No rehandling of cargo is required between the dock and the hold, thus increasing the speed of handling cargo, eliminating breakage and rehandling, and consequently reducing the costs of loading and unloading cargo.

The "Siporter" also permits the handling of heavier and more bulky cargo that can be handled on trucks and is particularly suited to pallet and container operation.

There is no loss of time in placing the equipment in operation on arrival of the ship in port since this type of equipment requires no ramps between the vessel and the dock. It is designed to load cargo from either the dock or lighters on the off-shore side of the vessel or in a roadstead.

The machine can be designed for handling automobiles if so desired.

The operation of this unit is relatively unaffected by change in tide level, which in some cases increases the incline of ramps to such an extent that older methods using trucks cannot be employed.

The "Siporter" has been designed in two basic types, i.e., the "Extensible Boom Type" and the "Trolley Type," each of which has somewhat different characteristics adapting it to specific conditions.

Trolley Type

The trolley type "Siporter" consists of a trolley carriage running on rails supported from the deck above in the athwartship passage. The trolley carriage is transversed from port to starboard by means of a motor-driven cross shaft with a pinion at each end, meshing with a rack at each side of the trolley on the ship's structure.

This trolley carriage carries two booms mounted in it on rollers. These booms operate in synchronism and can be projected to either port or starboard side of

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the trolley carriage for operation through either port or starboard side ports with a projection of 15 feet or more beyond the ship side. These booms are motor operated by means of a shaft mounted above, with a pinion on each end meshing with a rack on the top of each boom.

The booms carry hoisting hook blocks at each end.

When operating from the starboard side of the vessel, the hook blocks on the starboard ends of the booms are in use, and those at the opposite end are latched to the boom operating only as idlers, the reverse being the case for operation from the port side of the ship.

The hoisting ropes from the two hook blocks are carried over the booms to a common drum mounted on a shaft driven by a single motor, thus operating the hook blocks in synchronism.

The operators' cabs are mounted under the trolley carriage, one at the port side and one at the starboard side, in each of which is installed a set of master controllers for operation of the hoist, trolley traversed and boom rack motions. A selector switch is provided for energizing the set of controllers in the cab from which it is desired to operate.

For starboard side operation, the operator occupies the starboard cab and the reverse for port side operation.

With this type of machine it is evident that only one operator is required as he travels with the machine and the load in a manner similar to that of an overhead crane. He is at all times in a position to clearly see the load from the time it leaves the dock until it is deposited into the hold of the ship.

All of the operating machinery and control panels are carried on the trolley frame, thus no separate machinery room space is required on the ship.

Extensible Boom Type

The extensible boom type as installed in 1948 on the PRESIDENT CLEVELAND and PRESIDENT WILSON, consists of two booms of sufficient length to span the breadth of the ship. These booms are stowed inboard when at sea. The booms are mounted in a horizontal plane on roller brackets supported from the deck above in the athwartship passage. Boom centers are suited to the width of pallet to be handled or for handling automobiles, in which case the center distance of the booms is greater. These booms can be projected through the side port opening at either side of the ship to an outreach beyond the ship's side of approximately 15′ more or less as the occasion demands.

They are extended or retracted in synchronism by an electric motor driving a cross shaft mounted above the booms. This shaft has a pinion at each end of the shaft meshing with racks on the top of each boom.

Each boom carries a trolley running inside the boom on its bottom flanges. These trolleys carry hook blocks that in turn support each side of the pallet. They are traversed from the outer end of the boom over the dock to the inner end of the boom over the hatch. The trolleys are actuated by ropes leading from a drum in the machinery room above.

The hoisting ropes from each hoist hook block are also carried back by means of sheaves to a motor driven hoist drum located in this same machinery room.

When the ship goes to sea the booms are retracted inboard to the stowage position and the side port doors are closed.

All the machinery for operating hoist motion, trolley motion and boom rack motion, together with the electrical control panels, are located in a machinery room of approximately 12′ by 25′ floor area. This room can be located either above or to one side of the athwartship passage.

The "Siporter" is controlled from three master switch stations, one located at each side port opening and one at the center hatch. In normal operation only two of these stations are used at one time, either the port or starboard station and the station at the hatch.

Two operators are required, one at each of the master switch stations at the side port and the hatch.

The operator at the side port station hoists the load from the dock and starts the trolley motion to traverse the load inboard, at which point the operator at the hatch station automatically takes the control from the side port operator, continuing the traversing motion until the load is over the hatch, and then lowering the load into the hold. He then hoists the empty pallet and starts the trolley traversing toward the side port, at which point the side port operator automatically takes over the control, finishes the traversing travel and lowers the empty pallet to the dock.

All motions of the machine are protected by over-travel limit switches and interlocks to prevent misoperation.

Comparison

It is evident from the above description that the extensible boom type machine requires space in the ship for machinery in addition to the athwartship passage.

This is not required by the trolley type machine as all machinery is carried on the trolley carriage.

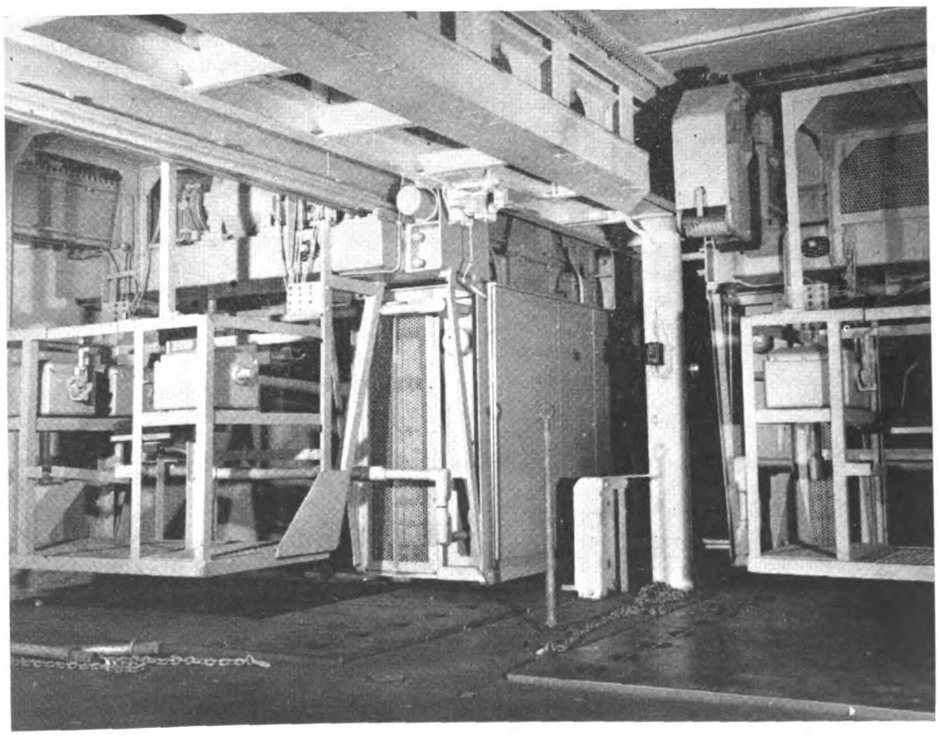
As the machinery room for the extensible boom type machine is usually located above the athwartship passage, it is evident that as all the machinery is located on the carriage of the trolley type machine, the overall weight is lowered one deck in the ship. This is advantageous from a stability viewpoint.

The trolley type machine, with its lighter booms, has an overall weight of approximately two-thirds that of the extensible boom type.

From the installation point of view, the trolley type machine makes a simpler job for the shipyard as it is a packaged type of equipment completely assembled and wired at the manufacturer's plant. The boom type machine requires all separate parts to be assembled and wired aboard ship.

However, there is one type of operation for which the extensible boom type machine is suitable which cannot be accomplished with the trolley type machine. This condition exists where a ship is equipped with wing hatches and it is necessary to load both wing hatches from either side of the ship. It is evident that with the trolley type machine it would not be possible to pass sufficiently far outboard to load a wing hatch on the outboard side of the ship away from the

(Continued on Page 25)



SS LAGUARDIA installation of the new "Siporter" consists of two units side by side. These machines operate simultaneously, although independently, either one to port and one to starboard, or both on either side.

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WASHINGTON Report

By The LOG's Own Correspondents

Congress Imposes Restrictions on U.S.M.C. Chartering

In a bill passed by the House and reported favorably to the Senate, a few restrictions were made on the Maritime Commission's present charter policy, although not the restrictions sought by many which would limit the number of vessels chartered to a direct ratio to those owned.

Reporting the bill to the House, the Merchant Marine and Fisheries Committee made the following statement:

"Consistent with the policy of the Congress, the Maritime Commission is not chartering any of its vessels so long as there is a privately owned vessel on the market awaiting business. The Committee approves of this policy of the Maritime Commission and strongly recommends its continuance. However, all of the available information indicates that there is not a sufficient number of privately owned vessels now available to transport the current foreign and domestic commerce of the United States, now being transported with the aid of the 368 vessels chartered from the Commission. Furthermore, the withdrawal as of June 30, 1949, of the 311 chartered ships which are engaged in foreign commerce would undoubtedly create such a shortage of ships that freight rates would rise on foreign-flag vessels as well as United States-flag vessels. Such a situation would be most unfortunate at a time when it is expected that additional United States-flag dry-cargo vessels will be required under private operation to meet the 50-percent minimum participation in the transportation of ECA cargoes, which has been assured under the newly announced policies of the ECA. Also it appears essential that the vessels now chartered to provide adequate service to Alaska and in the coastwise and intercoastal trades of the United States should be continued, since the operators in these trades do not at the present time own sufficient vessels of suitable types to successfully reestablish adequate operation and service of privately owned vessels in such trades.

"In view of the foregoing and other persuasive considerations, your committee is of the opinion that the Commission's charter sale, and operating authority under the Merchant Ship Sales Act of 1946, as amended, should once more be extended. On the other hand, it is felt that despite the prospect of a continuing need for chartered vessels for another year, the foreign and domestic shipping situation has stabilized sufficiently to permit the imposition of some restrictions on the Commission's charter authority. Accordingly Section 2 of this resolution provides that any charter in effect at the time of the enactment of the resolution shall be terminated by the Commission at the earliest date permitted under the terms thereof after June 30, 1949, unless the charterer enters into an agreement with the Commission that each vessel delivered or retained under such charter shall not be redelivered to the Commission, at the option of the charterer, within less than 6 months for liner services, except coastwise services, or 4 months for bulk services and coastwise services, or for the remainder of the period ending June 30, 1950, if such period is less than said periods of 6 and 4 months, respectively. Similar provision is made with respect to any new charters made after the enactment of the resolution. Section 2 also provides that no chartered vessels affected by the provisions of the resolution may begin a new voyage after June 30, 1950. It is intended by this section to assure operators of privately owned United States-flag vessels of a minimum of competition from Government-owned chartered vessels and at the same time keep available for private operation sufficient Government-owned tonnage, to the extent found necessary, in order to provide transportation at reasonable rates for the foreign and domestic commerce of the United States and to meet the needs of the coastwise trades, including the Alaska trade, while they are attempting, in the transition period, to reestablish adequate service therein.

"Subject to the particular limitations prescribed in section 2 of this resolution it is contemplated that the Maritime Commission will continue to sell, charter, and operate ships in accordance with existing procedures and without any change in its present policies. Various proposals were suggested to your committee to establish ratios of chartered vessels to be allocated on the basis of the number of privately owned vessels of a particular operator. These suggestions were considered by your committee but it was felt that except for the restriction of minimum charter periods no other limitations or changes should be made which would alter the policies and procedures presently pursued by the Commission.

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House Bill for Construction Subsidy in Puerto Rico Trade

A bill introduced into the House on May 26 and referred to the Merchant Marine and Fisheries Committee makes several provisions for water transportation to and from Puerto Rico. The bill (H.R. 4847) reads as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is an urgent need for the construction of modern, fast, passenger-type vessels for operation between the continental United States and Puerto Rico in order (a) to promote the economic rehabilitation of Puerto Rico by stimulating tourist travel between the continental United States and Puerto Rico; (b) to provide vital troop transportation capacity in the form of passenger vessels easily convertible to troop transports in the event of national emergency; and (c) to enlarge employment opportunities for seagoing and shore-side personnel in the maritime and related industries. Under existing economic conditions, private industry cannot reasonably be expected to construct such passenger liners at full cost in the United States for operation in the Puerto Rico trade because of competition for tourist business to and from competitive destinations with foreign-flag vessels, built and operated at substantially lower costs. It is therefore essential that Government aid be extended in the construction and, to a limited extent, in the operation of such passenger liners.

"SEC. 2. Pursuant to section 509 of the Merchant Marine Act, the United States Maritime Commission shall give consideration to any application for the construction of passenger liners for operation between the continental United States and Puerto Rico. No construction-differential subsidy shall be allowed in the granting of such application, but the Maritime Commission shall pay 50 per centum of the construction cost thereof as the estimated cost of national defense features of such vessels. Such passenger liners shall be treated as 'new' vessels within the meaning of sections 510 and 511 of the Merchant Marine Act, 1936. The term 'passenger liner' shall include only vessels designed for the carrying of at least three hundred and fifty passengers.

SEC. 3. Any passenger vessel with accommodations for at least one hundred and seventy-five passengers which is to be replaced by a vessel constructed pursuant to the provisions of this Act shall be treated as an 'obsolete' vessel within the meaning of section 510 of the Merchant Marine Act, 1936. The trade-in allowance for such a vessel shall be fixed by the Commission at the owner's depreciated cost computed in accordance with the basis adopted by the Bureau of Internal Revenue for income-tax purposes.

"SEC. 4. If the Maritime Commission determines that the construction and operation of passenger liners in the Puerto Rico trade requires additional aid to offset in part the lower operating costs of foreign-flag passenger vessels engaged in competition for American tourist business, the Commission may provide marine insurance on such passenger liners pursuant to section 10 of the Merchant Marine Act, 1920, at such reduced or nominal rates as the Commission may deem necessary to achieve the objectives of this Act. In granting such aid, the Commission shall impose such conditions as it may

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deem appropriate, which shall include a provision that the difference between the Government rate and the normal commercial rate for such insurance shall be repaid to the Commission out of profits exceeding 10 per centum per annum, averaged over any ten-year period, on the same basis as now used in determining recapture of operating differential subsidies under section 606 (5) of the Merchant Marine Act, 1936."

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Panama Canal Issue Getting Hotter

The Panama Canal problem, first brought out in a feature article in The LOG over a year ago entitled "Who Pays For The Panama Canal" is now beginning to come to the front in Congress, although any kind of legislation is very unlikely during this present session.

Mr. Bailey, appearing before the Panama Canal Subcommittee of the House Committee on Merchant Marine and Fisheries, made the following recommendations relative to Panama Canal tolls:

"A. Recognizing that the canal is a dual purpose establishment for national defense and for commercial transits and that no part of the cost of its construction or of its operation has heretofore been charged to national defense, we suggest that in the future the minimum contribution which may be equitably made on account of its national defense characteristics, is that there be no further charge for interest on capital provided for its construction or improvement by the U. S. Government.

"B. The future toll schedule at Panama should reflect rates sufficient to pay all operating expenses properly allocable to transit operations, including maintenance, depreciation of all expendable parts, and a proper charge for the expenses of providing all facilities and services necessary to the operation of the Canal and for its employees and their families.

"C. There should be no preference or exemptions in the toll computation for ships, but all ships of all types, commercial and military, of all nationalities, should be treated equally.

"D. In determining the allocation of expenses for multiple purpose services, functions or facilities, such allocation should be upon the basis of an arbitrary one-half thereof, or some other logical division."

Hoyt Haddock, Executive Secretary, CIO Maritime Committee, stated that his Committee was in agreement with these recommendations.

Captain Willis W. Bradley recommended that the capital cost of the Panama Canal and a considerable part of service activities be charged to national defense.

The hearings were recessed subject to call of the chair.

Appropriations Committee Recommends M.C. Passenger Vessels

The House Committee on Appropriations, in reporting the Foreign Aid Appropriation bill, 1950, to the House (H.R. 4830) made the following recommendation relative to passenger transportation facilities to Europe:

"Another matter which the committee desires to call to the attention of the administrator is that of tourism. The committee is not convinced that sufficient effort is being made by the responsible agencies of this Government to increase tourism in western Europe by providing reasonable and adequate transportation. There undoubtedly are in this country tens of thousands of individuals who are anxious to visit Europe, but cannot do so because of present high cost of transportation. Every agency of the Government should bear in mind the fact that this is a program of the United States and its people rather than a program of the Economic Cooperation Administration.

It is recommended that the Maritime Commission make a study as to the feasibility and possibility of converting a number of surplus vessels into one-class accommodations with a view to providing adequate transportation at reasonable cost. It is also urged that the Civil Aeronautics Board make a similar study with the same purpose in view in regard to air transportation. If these arrangements cannot be made under existing legislation, such legislation as may be necessary should be recommended to the Congress.

While it is true that at the present time adequate living accommodations are not available in many of the European countries, such accommodations undoubtedly would be constructed provided there was some assurance of reducing cost and restrictions of travel. This increase in tourism would not only provide the necessary dollars to the participating countries, but also would ease the burden on the taxpayer in that a portion of the European dollar shortage would be supplied by those who can afford trips to western Europe."

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United States Flag Shipping Participation in ECA Cargoes

The ECA has recently sent the following letter outlining its plan for the allocation of Government-aided cargoes to the Organization for the European Economic Cooperation. This plan would be used only if the participating nations do not devise a "workable" plan for meeting the 50-50 percent shipping provisions of the ECA Act:

"Public Law 47 which was signed by the President April 19, 1949, amends Section 111 (A) (2) of the ECA Economic Cooperation Act of 1948, relating to transportation in U. S. flag vessels of ECA-financed commodities. This amendment is to the following effect:

"(a) At least 50% of such commodities are to be carried in U. S. flag vessels to the extent such vessels are available 'at market rates for U. S. flag vessels';

"(b) The section applies to gross tonnage of commodities procured out of funds made available under the law and transported from the U. S. on ocean vessels;

"(c) The section also applies to gross tonnage of commodities procured out of funds made available under the law and transported to U. S. on ocean vessels;

"(d) Tonnages are to be computed separately for dry bulk carrier, dry cargo liner and tanker services;

"(e) The administrator is to endeavor to secure a fair and reasonable participation by U. S. flag vessels in cargoes by geographic area.

"It is expected that the participating countries will be able to devise a workable plan which will meet the new requirements of the act. ECA is aware that as a result of discussions in the Maritime Transport Committee of the OEEC a new procedure has been formulated designed to meet these requirements. If the operation of this procedure or some other effective procedure meets the requirements of the act for the period April 3 through June 30, and subsequently by the end of each quarterly period thereafter, there will be no need for further action on the part of the ECA. However, the responsibilities of ECA to the Congress of the U. S. for the fulfillment of the provisions of the act are such that it has been necessary to devise an alternative procedure to be applied in the event that the procedure formulated by the participating countries does not meet the requirements of the act.

"This alternative procedure would operate as follows:

"1. For each of the three categories of shipping (dry bulk carriers, dry cargo liner and tanker) ECA would specify a percentage quota of ECA-financed cargoes to be carried from the U. S. to each participating country in U. S. flag vessels. These quotas would produce for each category of shipping, a total movement to all participating countries as a group, of 50% in U. S. flag vessels. They would be given to each participating country through the OEEC. Individual quotas may be adjusted after consultation with the OEEC. Any such adjustment would, of course, have to be consistent with an overall movement by categories of at least 50% in U. S. flag vessels and with due consideration to reasonable participation by geographic areas.

"2. It would be the responsibility of the participating countries, individually or through OEEC, or through any other means that may be appropriate, to establish procedures whereby shipments in U. S. flag vessels would be maintained at the required quotas, insofar as U. S. flag vessels are available at market rates for U. S. flag vessels.

"3. To measure performance, a three-months moving average basis would be followed, the computation thereof commencing with shipments on April 3 and

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thereafter. Compilations of shipment tonnage by the three classes of shipping would be made monthly and copies would be supplied to you as well as to participating countries or their designees, thus providing the same basic data for current information and percentage computation.

"4. On the basis of these compilations, ECA would determine from time to time for each category of shipping the percentage of ECA-financed shipments actually carried in the U. S. flag vessels to each participating country. In any case where the actual percentage were to fall below the applicable quota, ECA would disallow ECA financing of such quantity of commodities shipped to the participating country in foreign flag vessels as would bring the percentage of ECA-financed commodities shipped to such country in U. S. flag vessels into conformity with such quota.

"5. In order that it may be possible to compensate fully for any shortcomings in the operation of the plan of the participating countries, the ECA will maintain during the period April 3 to June 30, and for each quarter thereafter, the records contemplated by the alternative plan described above. If the procedure of the participating countries does not achieve full compliance with the requirements of the act for that period or any quarter thereafter, the ECA will then put into effect the disallowances referred to in paragraph 4 above. On or before June 10, ECA will forward to you a list of tentative quotas for each nation and each category. If in your view, adjustments in these quotas seem desirable, ECA stands prepared to promptly consult with you regarding any adjustments."

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Ship Owners Get Fraction of One Percent of All Federal Subsidies

Total net operating differential subsidy payments to American subsidized shipowners have been less than 17/100th of one percent of all Federal subsidies paid to business and farmers from 1934-48, National Federation of American Shipping reported.

A Federation report on operating subsidies to American and world shipping showed:

Total Federal subsidy payments in the 15-year period amounted to $14,525,217,000. Net payments for operating differential aid amounted to $24,127,000, due to the fact that more than half of the entire operating subsidy paid by the Government has now been repaid or is soon to be repaid by the steamship companies. Of all Federal subsidies paid that to ship owner is the only one subject to be returned to the Government by the recipient.

Construction subsidies paid by the Government to equalize the cost between American and the cheaper-built foreign merchant ships amounted to $341,013,000 in the 15-year period, or 2.3% of the total. Such Federal aid resulted in the construction of 247 vessels, many of them used in World War II.

The Federation report also showed the United States in the bottom position in a comparison of world nations in the amount of operating aid to its shipping in relation to its national income. For example:

In 1947 Norway spent $150 in operating aid to its merchant ships for every $1,000,000 of national income; in 1949 Spain is scheduled to spend $26 of every $1,000,000 of its national income on operating aid; the United Kingdom will spend $1.90 for every $1,000,000 of its national income. For the fiscal year of 1949 the United States will spend only 6.6 cents out of every $1,000,000 of national income on operating aid for its merchant ships.

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Status of the United States Merchant Fleet

The privately-owned U. S. merchant fleet on June 1, 1949, totaled 1,197 vessels of 1,000 gross tons or over, for the first time this year falling below the 1,200 figure, National Federation of American Shipping reported in its monthly summary of the status of American Merchant Marine.

The privately-owned oceangoing fleet reported on June 1 is divided into 716 dry cargo and combination vessels of 7,067,000 deadweight tons and 481 tankers of 7,011,000 dwt.

During May no vessels were delivered to private U. S. flag ownership from new construction, and five vessels were removed from service due either to overage or dismantling.

The Federation reported a slight decline in vessels under bareboat charter operation. On June 1, a net of 375 vessels were scheduled to continue in bareboat operation. Vessels under General Agency Agreement continue to decline, 15 during April, 10 at the beginning of May, and 7 on June 1.

The National Defense Reserve Fleet was reported at 1,871 vessels, excluding tugs, cableships and military auxiliaries.

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Compromise Shipping Bill Brings Industry Accord

For a few days up on Capitol Hill reporters and witnesses alike could hardly believe what they were hearing. For the first time since the end of the war the several segments of the shipping industry were in substantial accord on a compromise long range shipping bill designed to modify and improve the provisions of the Merchant Marine Act of 1936. With only a few minor grumblings and warnings of things which might be asked after passage of the present bill was once secured, the hearings before the House Merchant Marine and Fisheries Committee proceeded without serious objection.

A summary of the major provisions of this compromise bill are as follows:

Construction-differential Subsidy

Requirements that vessels receiving construction-differential subsidies operating in the foreign trades must be operated only in "essential" trade routes is removed. (Secs. 1, 2 and 4)

Mortgage Relief

Purchasers of passenger vessels constructed or purchased under Title V of the Merchant Marine Act, 1936, or Section 4 of the Merchant Ship Sales Act of 1946, which are delivered subsequent to date of enactment of the bill, and which have accommodations for 200 passengers and meet certain other requirements, may have obligations under mortgages covering such vessels satisfied and discharged by surrender of the vessel to the government, free and clear of all liens and incumbrances. (Secs. 3 and 5)

Trade-in of Obsolete Vessel

Age at which vessels are eligible for trade-ins under Section 510 of Merchant Marine Act, 1936, reduced from 17 to 12 years, and rate for use of obsolete vessel by owner during period of construction of new vessel to be fixed for entire period of such use at time of execution of contract for construction of new vessel. (Secs. 6 and 7)

Construction Reserve Fund

(1) Fund deposited in construction reserve funds may be used for reconstruction and reconditioning of new vessels, as well as for their construction or acquisition, and for liquidation or purchase-money indebtedness, except that earnings hereafter deposited may be used for acquisition, reconstruction and reconditioning of vessels only with approval of the Commission. (Secs. 8, 10 and 12)

(2) Tax deferment extended to deposited earnings from vessels documented under the laws of the United States, and to any or all earnings otherwise available for distribution to stockholders which are deposited with the approval of the Commission. (Secs. 8 and 9)

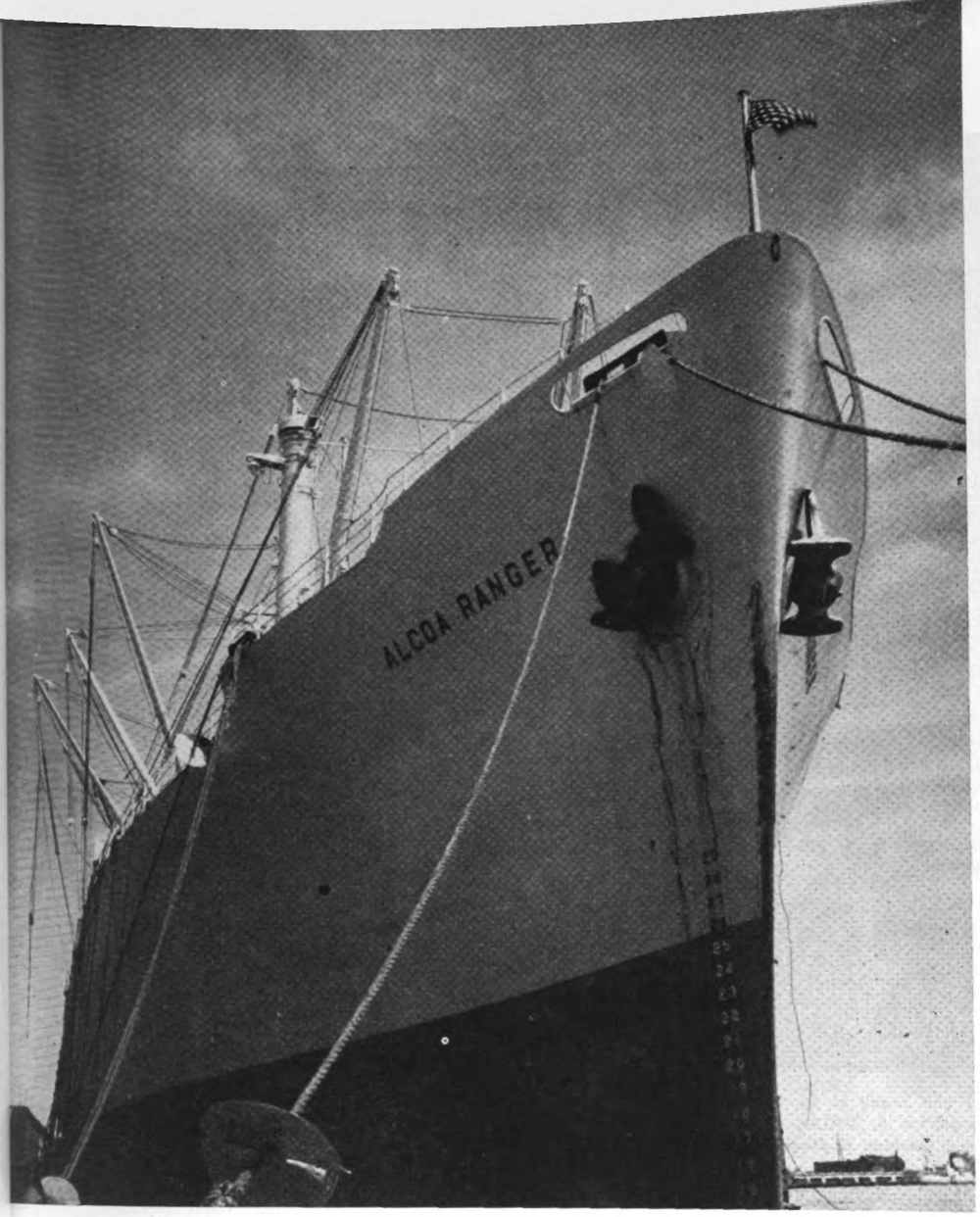
(3) Funds on deposit on date of enactment of bill to be obligated within two years after such date, and funds thereafter deposited to be obligated within five years from date of deposit. (Sec. 12)

Accelerated Depreciation

(1) Unsubsidized operator permitted to amortize cost of vessel in such manner and in such annual amounts as he deems appropriate, provided not more than fifteen per centum of such cost is amortized in any one taxable year. Such operator required to make payments on mortgage indebtedness to United States covering such vessel to the extent of the amortization deduction taken on vessel for such taxable year. (An amendment proposed to the Committee Print—see L.R. 49-59, page 11—would provide that the operator would be required to make payments on mortgage indebtedness to United States covering such vessel to extent of an amount equal to the difference between the amortization deduction taken on the vessel for such year and the amount previously paid

(Continued on Page 36)

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THREE ALCOA CARGO SHIPS REFRIGERATED

Boland Machine and Bailey Refrigeration install refrigeration in 'tweendecks of ALCOA RANGER, ALCOA ROAMER, AND ALCOA RUNNER.

Following the trend toward refrigeration Alcoa has just finished refrigerating the number three 'tweendecks on three of its cargo ships in Caribbean service.

The work was done by Boland Machine & Manufacturing Company of New Orleans, and the installation of the refrigerating machinery was made by the Bailey Refrigeration New Orleans Corp., representing General Electric in New Orleans.

Refrigerating equipment is General Electric Model CM104J. This type unit is motor driven with speed control on the motors and fifty percent capacity modulation by cylinder by-pass. There are four compressors each with four cylinders, four-inch bore by four-inch stroke, and a capacity of 4.2 tons each. Two 1½ h.p. and two 2 h.p. fans are located in the boxes.

The No. 3 upper 'tweendeck was cleared of all existing temporary bulkheads. Wiring, piping, etc., was either re-routed or removed, to provide a clear area for the installation of four refrigeration boxes of 13,000 cubic feet total capacity. Steel (5/16" plate) longitudinal bulkheads were installed on each side of No. 3 hatch 13'-0" from centerline of ship, extending from frame 71½ to frame 88, and port and starboard to arrangement of refrigerating machinery space between frames 88 and

ALCOA RANGER, one of three ships to have #3 tweendecks refrigerated.

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Boland Machine & Manufacturing Company converted the 'tweendecks for refrigeration. Boland worker here is welding in a new transverse bulkhead.

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94. The approximate net capacities of the boxes are as follows:

Box No. 1—1991 (Bale) net cu. ft.
Box No. 2—2100 (Bale) net cu. ft.
Box No. 3—4461 (Bale) net cu. ft.
Box No. 4—4461 (Bale) net cu. ft.

TOTAL....13013 (Bale) net cu. ft.

A transverse bulkhead was installed across the centerline of ship between the above mentioned bulkheads on frame 71½. A transverse bulkhead was installed on frame 88 across the centerline of ship to 16'-0" off centerline of vessel, port and starboard. The space between the new bulkhead on frame 88 and the existing bulkhead on frame 92 and 94 will accommodate the Refrigerating Machinery.

All new steel bulkheads were made of 12.75# plate stiffened with 5"x3½"x5/16" angles spaced approximately 30" and shall be all welded construction. Spaces forward of frames 71½ and 73 were divided into two compartments. Port and starboard wing compartments Fr. 73 to 94 are single compartments.

The refrigerated spaces were insulated so as to maintain a temperature of 0° Fahrenheit with an outside temperature of 100°F and without showing sweating. With the machinery shut down, the doors closed tight and the compartment empty, the temperature rise from the specified temperature shall not exceed an average of 1½°F per hour for a period of six (6) hours. These tests shall be made after the spaces have been brought down to the specified temperature with the machinery provided and held there for twenty-four (24) hours and shall be based on an ambient temperature of 85°F.

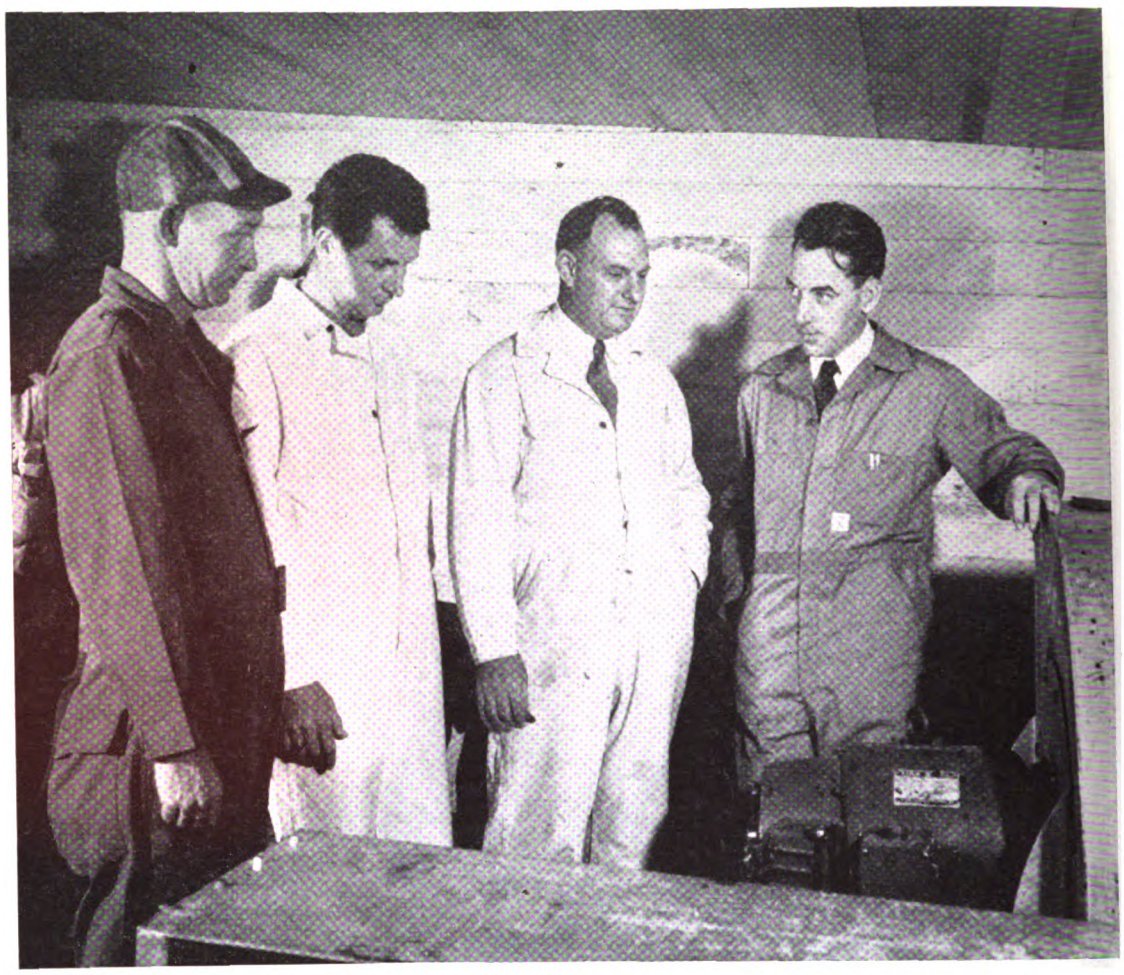
The minimum thickness of insulation is as follows:

Under Shelter (weather) deck—13" with a minimum of 4" over beams.
Ships side—12" with a minimum of 4" over beams.
Boundary bulkheads—12" with a minimum of 4" over beams.
Divisional bulkheads—6" minimum.
Underside of 2nd deck—8" of fibre glass covered with 18 gauge galvanized sheathing.

The insulating material on all outside areas, boundary bulkhead is Fiberglas of sufficient density to conform to conditions required, and was adequately secured in place.

Deck insulation consists of two layers of 4" cork board laid down in hot asphalt with a mopping of hot asphalt on top, and followed by a membrane waterproofing flashed 9" up on both sides and consisting of three layers of 15# asphalt felt paper, each layer laid in asphalt with a heavy mopping of hot asphalt on top. The cork board shall run to the outside boundaries under all wall insulation.

Over the insulation lay 1½" of concrete and over this 1" asphalt mastic. The concrete was reinforced with galvanized expanded metal. The mastic floor will be coved up the sides 6" and 18 gauge ½" galvanized wire mesh was installed in the mastic cove to comply with the regulation of U. S. Public Health Service.



Looking over this unit ready to be installed are, left to right: B. A. WILSON, Gulf Electric Company, subcontractor on the job; J. K. MILLER, Chief Engineer of the ALCOA RANGER; SAM ROSAMOND, General Manager of Boland Machine & Manufacturing Co.; and L. P. ACKERMAN, Port Engineer for Alcoa from Baltimore.

The interior finish over the insulation and overhead consists of two layers of 1" T & G Fir sheathing, with two layers of insulating paper between.

All doors installed to refrigerating compartments are Jamison Double Sharp doors 10" board form insulation. Inner and outer surfaces of doors are sheathed with 1" T & G boards. Front and back of door, door frame and sill are covered with 10 gauge galvanized steel.

Cargo Refrigeration System

The cargo refrigeration system consists of four Freon compressors driven by electric motors through belts. The compressors are cross-connected in such a way that any compressor can handle from one to four spaces by adjusting the cross-over valves accordingly. There are four refrigerated cargo spaces, each with its own direct expansion coil, fan unit and duct system.

Each cargo space has its own separate electric control system consisting of a fan control which starts and stops the fan motor and a rheostat which controls the speed of the fan. When the fan motor is energized, power is supplied to the Freon liquid line solenoid valve through the contacts of a return air duct thermostat and a supply air duct thermostat. When carrying frozen cargo the supply duct thermostat will be manually set at its lowest temperature, thus closing its contacts, and the control of the cargo air temperature will be by the return air duct thermostat only. When carrying chilled cargo the return air duct thermostat will be manually set at its lowest temperature thus closing its contacts, and the control of cargo air temperature will be by the supply duct thermostat only.

In the event that the load on any one compressor is divided between chilled and frozen cargo, then the evaporator pressure regulator valves should be put into operation on the space that is carrying chilled cargo so as to maintain a higher pressure in the coil than in the suction main. In case the fan motor is shut off by its control or by loss of power supply, the liquid solenoid will be closed immediately, preventing liquid from filling up the coil.

In some cases after pull down, when the load is so light that even with the use of capacity modulation and the reduction in motor speed, the machine short cycles, the evaporator pressure regulators should be put into operation.

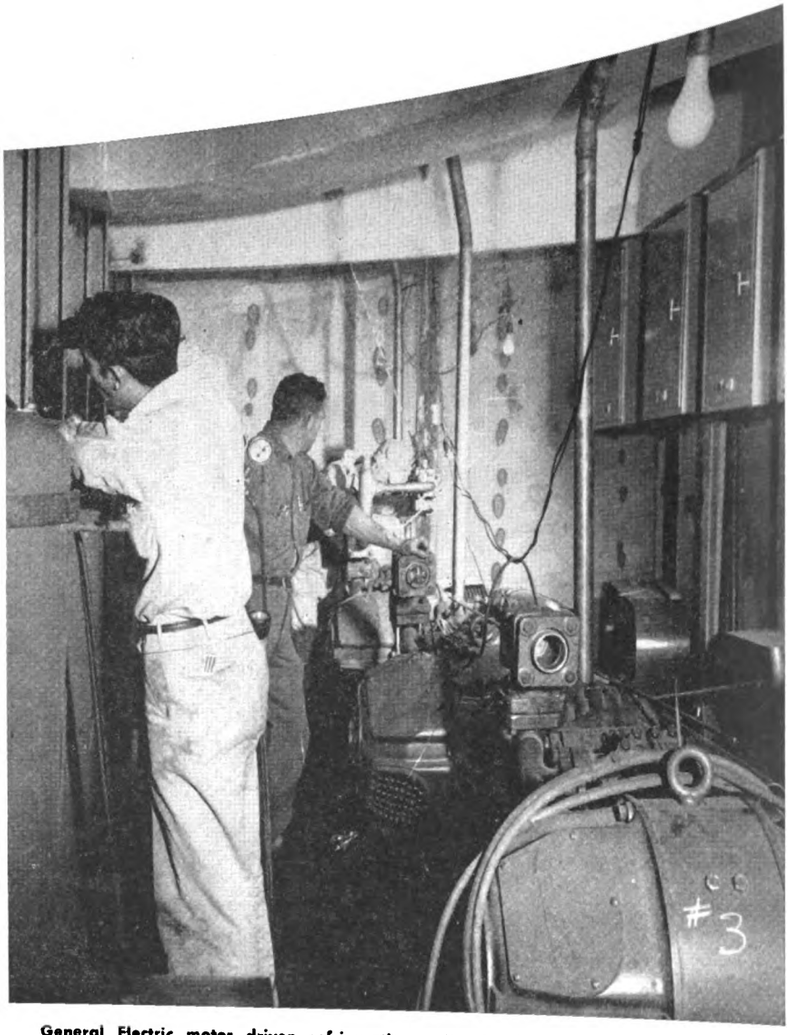
Each cargo compressor has its own electric control current and operates as follows:

As the cargo spaces become satisfied in temperature, their respective solenoid valves will close, allowing the system to operate at a lower back pressure. The reverse action low pressure switch located at the compressor will close its contacts. Thus energizing the capacity modulation solenoid valve, reducing the compressor capacity 50%. If this capacity is insufficient to hold the required cargo space

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Doors leading into refrigerated compartments are Jamison Double Sharp doors.



General Electric motor driven refrigeration unit with four compressors with a capacity of 4.2 tons each.

temperature, then the reverse action pressure switch will open and allow the compressor to operate at 100% capacity. The system will modulate between these two points. The compressor has a manual speed adjustment by field rheostat between 100% and 65% of rated speed. This modulation, due to speed change is entirely independent of the temperature modulation previously described, and the operator can readily adjust the manual speed control to meet climate, loading or storage temperature conditions.

The Freon compressors must never be operated in parallel without isolating one system from the other to assure the return of lubricating oil to the compressor crankcase.

The condensers are equipped with water regulating valves which control the flow of water through the condensers, thus maintaining constant condensing temperatures. If pressure control tubing from the water regulating valve is connected to the condenser head, the head pressure governs the flow of water through the condenser. The valve is of the cycling or flashing type which cycles from fully open to fully closed position, maintaining the head pressure within plus or minus 5 psi.

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More than 37,000 tons of canned California fruits and vegetables and 27,000 tons of dried fruit were shipped from the Port of Oakland to countries all over the world.

SS LaGuardia Gets New Type Siporter

(Continued from Page 19)

dock. The boom type machine can accomplish this operation by merely retracting and projecting the boom to the opposite side of the ship during the trolley traversing operation, thus permitting the load to be spotted over a wing hatch on the outboard side of the ship.

For all ordinary ship designs with center hatches, the trolley type machine has the advantage of lesser weight lower in the ship, one operator instead of two, less shipboard installation and somewhat less in cost.

The trolley type machine should also be somewhat faster in operation as the trolley motion is more positively operated by rack and pinion drive than the rope-operated trolley of the extensible boom type.

Furthermore, maintenance of the trolley type machine should be lower than for the extensible boom type, as there is less rope and fewer sheaves to be maintained.

It is of interest to note that this side port cargo gear can be arranged for AC operation if so desired.

Where large cargo handling capacities are required and it is desirable to have simultaneous port and starboard operation, twin trolley type, or extensible boom type side port installations have been made with two machines operating side by side in one athwartship passage (see cut). With this arrangement, two side port openings are located side by side in the shell of the ship. In this instance each "Siporter" delivers its cargo through a separate center hatch located under each machine.

Capacities and Speeds

The side port cargo handling gears of either the extensible boom type or the trolley type can be designed for load capacities of 1½ to 3 tons or more, with the following speeds:

Hoist, approximately 150 f.p.m.

Trolley traverse, approximately 100 f.p.m.

Boom Racking, approximately 75 f.p.m.

The above speeds were selected to give the machine an operating capacity of thirty round trips an hour.

The horsepowers required are approximately as follows:

3 ton machine: Hoist 50 HP; Trolley Travel 15 HP; Boom Rack 10 HP.

1½ ton machine: Hoist 25 HP; Trolley Travel 10 HP; Boom Rack 7½ HP.

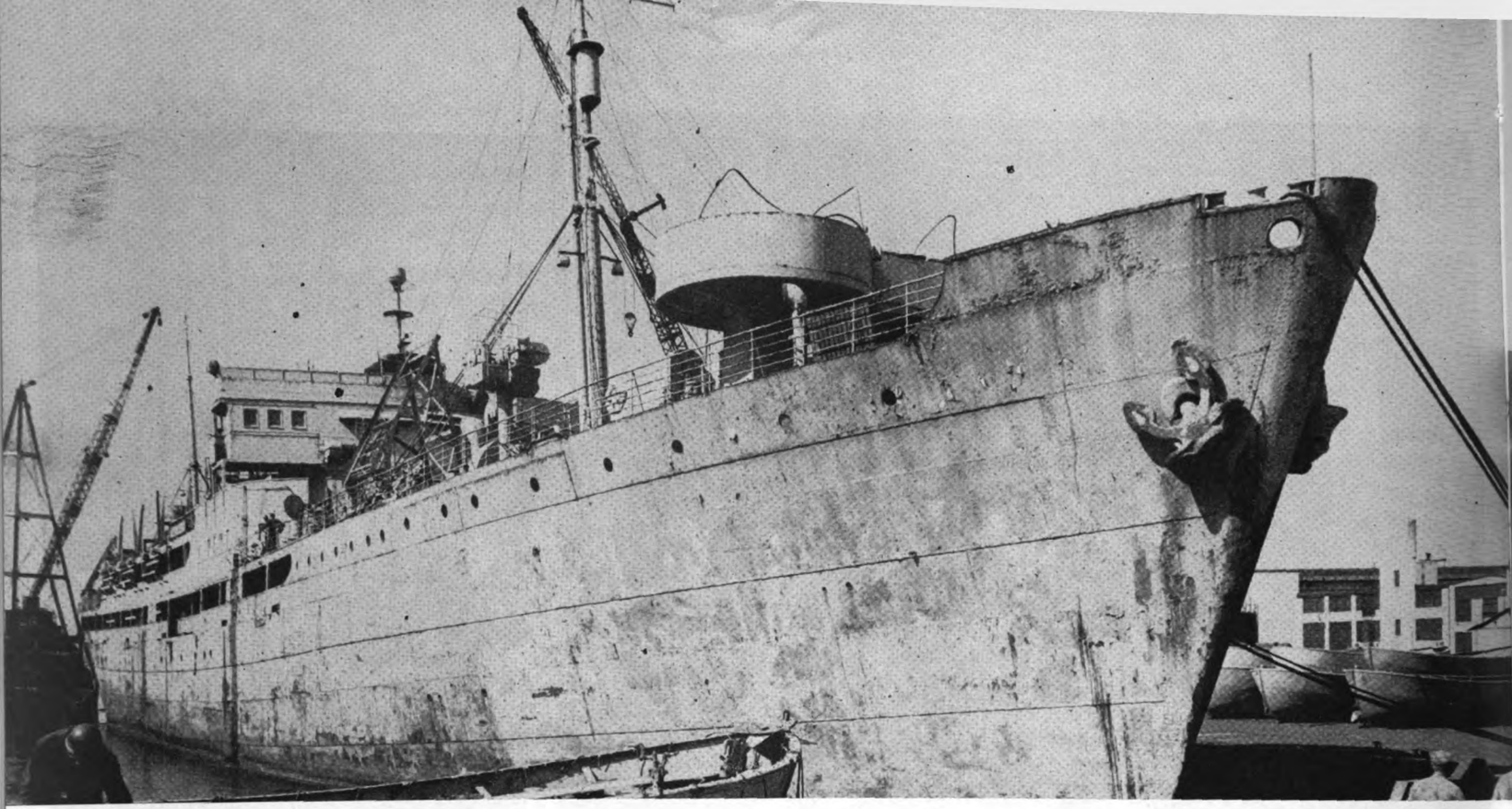
These horsepowers are approximate as they will vary somewhat with the length of outreach of boom and other characteristics which may vary with the particular ship involved.

Ship Requirements

For the installation of either the extensible boom type or trolley type "Siporter," it is necessary that there be an athwartship passage with side ports at both sides of the ship. It is desirable to have a moulded deck height of not less than 9'. This is necessary so that the

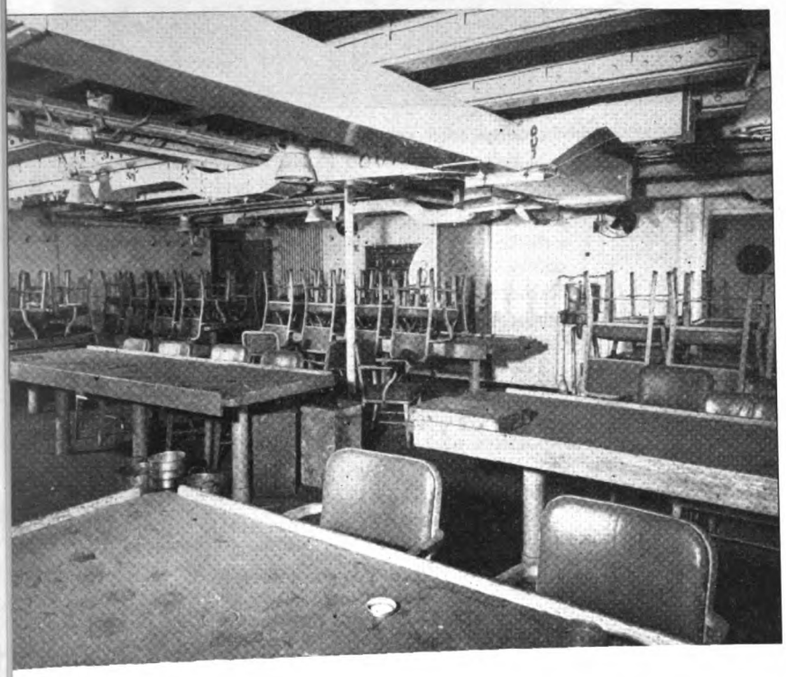
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U.S.A.T. ACONCAGUA reconverted . . .

TODD YARDS CO
TURKISH SHIP CO



BEFORE Todd went to work this was the officers' mess. It is now the first class dining lounge. In addition the ships feature a first class lounge-cafe with outdoor bar, music room and library, smoking room lounge with bar, and dancing areas.



BEFORE the reconversion this was the troop infirmary. On the new GIRESUN it is now a first class passenger stateroom. Second class accommodations provide for a lounge smoke room and dining salon, with music piped in from the first class music room.

Four reconversions of passenger liners have been completed by three Todd Shipyards. The four ships, reconverted for the Turkish Government, are the former American liner MONTEREY, converted at Todd Shipyards Corporation, Hoboken Division; two sister Diesel ships, formerly the ACONCAGUA and COPIAPO built in Denmark in 1937 for the Chilean Line, converted at the Brooklyn yard; and the former IMPERIAL, sister ship to the other Chilean Line vessels, done at the Alameda yard.

The MONTEREY (not to be confused with the Matson liner MONTEREY) was originally built as the PUERTO RICO in 1932 and later re-named the HAITI. She is a 385-foot, 5,236 gross ton vessel. Her new name is the ADANA.

All three of the Chilean Line vessels have Burmeister-Wain diesels and are 440 ft. 6 in. long, 58 ft. beam, and 34 ft. depth, of 7200 gross tons each. During the war they were operated by the U. S. Navy as transports and were acquired by the Turkish Government in August, 1947, from the Maritime Commission.

The ADANA has accommodations for

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Turkish Motor Vessel GIRESUN.

RDS COMPLETE

SHIP CONVERSIONS

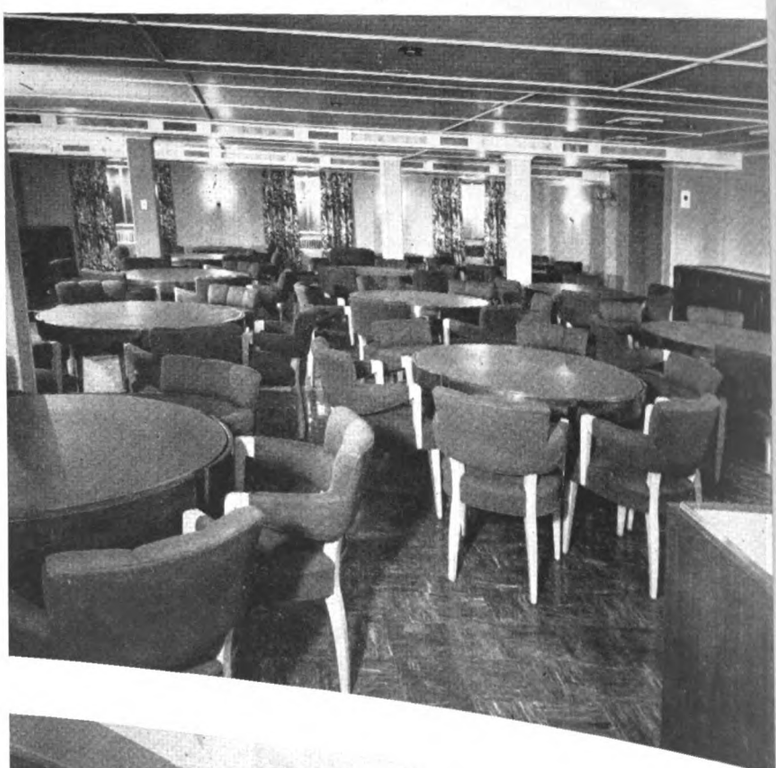
488 passengers—140 first, 54 second, 78 third, and 216 deck class. The first class passenger quarters are all on "A," "B" and "C" decks in the main superstructure; second class quarters are in the poop deck house; while third and steerage class quarters are on "D" deck aft.

The conversion work on the ACONCAGUA, COPIAPO and the IMPERIAL was identical inasmuch as these three were all sister ships. This trio will carry 413 passengers each, and 87 crew members. The passenger accommodations provide for a special owners' cabin and for 119 first, 70 second, 49 third, 90 fourth, and 95 deck or steerage class passengers.

On all four ships, the enginerooms had their equipment opened for inspection and put into first class operating condition to comply with the classification society recommendations. The refrigeration, hot and cold water, ventilation, fire detection and control, electrical and sanitary systems and the lifeboat equipment were overhauled and in many cases modified or enlarged to meet their new requirements. The conversions were all made to

(Continued on Page 36)

AFTER the work was accomplished, this is what the first class dining salon looks like. The four ships constituted one of the largest individual contracts secured by Todd since the war.



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AFTER Todd finished the job, this is what they turned out for a first class passenger stateroom. Marinite was used throughout for bulkheads and magnesite was used for the decks.

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OPERATION AND MAINTENANCE OF STEAM TURBINES AND GEARS

A complete program of preventive or planned maintenance inspection for main and auxiliary turbines, main reduction gears, and auxiliary set reduction gears.

By R. J. BROWN
Assistant Turbine Engineer
General Electric Company*

PART I

The operation and maintenance of the modern Marine steam turbine and gear for both main propulsion and auxiliary sets should be recognized as a joint undertaking. A continuous non-outage and efficient performance cannot be assured without sustained good operation and without proper inspection and maintenance of the various parts of the turbine and gear. The criteria for operation and maintenance should at all times be the keeping of factors, both thermodynamic and mechanical, to the original or subsequent improved design of the manufacturer.

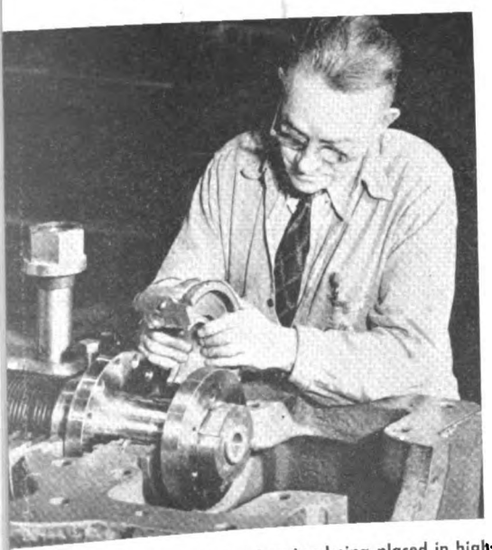
While operation and maintenance as an undertaking should be one, a consideration of each individually is to be made here for discussion purposes. Even so, it will be apparent that no absolute distinction exists, as the one depends upon the other. Also, it is understood that manufacturer's instruction books provide specific operation and maintenance procedures which should always be followed. The purpose of this paper, then, is to present in relation to design concepts some of these factors to the purpose that a more comprehensive understanding of operation and maintenance will result.

OPERATION IN GENERAL

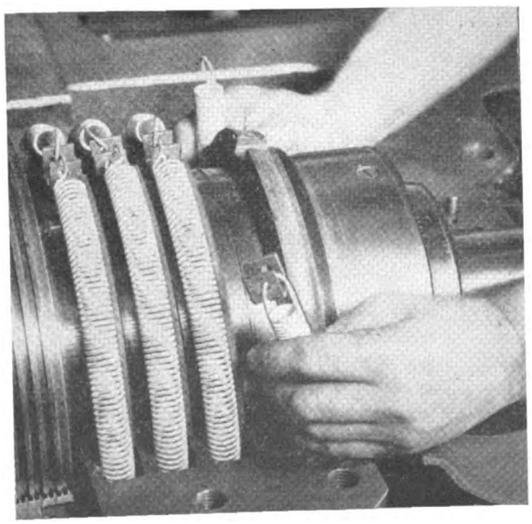
Proper operation basically concerns these things:—(1) the keeping of original performance or efficiency as regards thermodynamic or steam rate design, (2) the keeping of safe and continuous running as regards mechanical design, and (3) the keeping of maintenance required to a minimum both of preventive or planned type and of casualty or sudden breakdown type. The actual and relative importance of these things to a ship's operator may be somewhat indeterminate, but certainly he should have conclusions concerning it.

Turbine Operation in General As It Affects Steam Rates

Operation factors of the turbine as regards steam rate performance may possibly be grouped as direct or of immediate effect and control, and again as indirect or of consequence generally after a period of time. In the first category we would include:—(1) inlet steam pressure and temperature, (2) exhaust steam pressure, (3) RPM, (4) valve control, (5) extraction demands, (6) steam seal regulation, (7) lubricating oil temperature, (8) sudden vibration. In the second category we would include:—(1) bucket or blade clearances, (2) packing clearances, (3) cleanliness of steam, (4) moisture separation, (5) leaky inlet and extraction valves, (6) proper drainage after shutdown, (7) sustained vibration.



Ball seat sleeve bearing being placed in high-pressure steam turbine.



Carbon packing being packed in marine steam turbine.

Direct Turbine Operating Factors Affecting Steam Rate

Marine steam turbines are designed for given steam inlet conditions of pressure and temperature. Operation at other than the design pressure and temperature affects the steam rate and the capacity of the turbine. The steam rate with new inlet steam conditions may be determined by multiplying the original steam rate by the ratio of the theoretical available energies at the two conditions and by the ratio of the turbine efficiences. (If the change in initial conditions is small, a few pounds in pressure, or 5 or 10 degrees in temperature, the turbine efficiency will be essentially constant, and the new steam rate may be approximated by using the ratio of the available energies. For large changes, the manufacturers' correction factors must be used.)

In order to maintain load with a reduced inlet pressure, additional valve opening would be required to not only maintain the original flow but to increase the total flow as per the increment of steam rate increase. A change in valve opening causes a change in turbine efficiency due to the change in energy distribution between the first or governing stage and the rest of the stages, and the change in flow causes a change in leaving loss, or if you prefer, in efficiency of the last stage. Where the change in initial pressure is more than a few percent, these effects are sufficient to cause an appreciable change in turbine efficiency and corresponding steam rate.

Likewise, if temperature only were changed, the new steam rate would be proportional to the ratio of theoretical available energies and the turbine efficiency change. While the energy distribution for a change in temperature is not changed enough to appreciably affect the turbine efficiency, the change in moisture in the latter stages with change in temperature effects the efficiency enough to cause the actual temperature correction to exceed the theoretical. In general 13°F change in temperature changes the nonextraction steam rate about 1%, with constant valve opening.

In the case of pressure change it was noted that nozzle area would have to be altered to maintain constant output. Strangely enough, at first thought, this is

Presented at the May 31, 1949, meeting, Northern California Section, Society of Naval Architects and Marine Engineers.

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practically not so with temperature variation, for the reason that the change in available energy is just balanced by an opposite change in the weight flow. This latter is the result of the inverse proportionate change in the flow function L/v. (Flow is basically proportional to $\sqrt{1/v}$ when pressure and area are held constant.) Thus the product of flow, (lbs/hr) x available energy, (BTU/lb) or total available energy (BTU/hr) remains essentially constant. For example, if P_1=450 lb pr sq in gage, t_1=750°FTT, and P_2=1.5 in Hg, then from the steam tables v_1=1.4820 cu ft per lb and theoretical available energy (h_1-h_{1a})=483 BTU per lb. Now consider P_1=450 lb per sq in gage, t_1=700° FTT, P_2=1.5 in Hg. Then from the steam tables, v_1=1.4088 cu ft per lb and theoretical available energy (h_1-h_{1a})=469 BTU per lb.

(Approximate percent change in steam rate=100%x[1—(469 BTU/483 BTU)]=2.9%.)

Total available energy E=flow, lb per hr x available energy, $(h-h_a)$, BTU per lb and for constant pressure and area—

$$E_1=(h_1-h_{1a})\times K/\sqrt{v}=$$

$$483\times\frac{K}{\sqrt{1.4820}}=396K \text{ (BTU per hr.)}$$

and $E_2=(h_1'-h_{1a}')\times K/\sqrt{v_1'}=$

$$496\times\frac{K}{\sqrt{1.4088}}=395K \text{ (BTU per hr.)}$$

The above conditions of pressure and temperature change may be illustrated from the output curve supplied by the manufacturer for a main propulsion set.

Fig. 1 shows an output curve from an instruction book for a typical 6000 HP unit. This output curve is of direct interest to the operator, and an understanding of it is essential to good operation.

For inlet pressure change a corresponding change in nozzle area is required for constant output or vice versa for constant nozzle area the output varies with the inlet pressure. On the other hand, for fixed pressure and nozzle opening the output is independent of temperature change over the range shown.

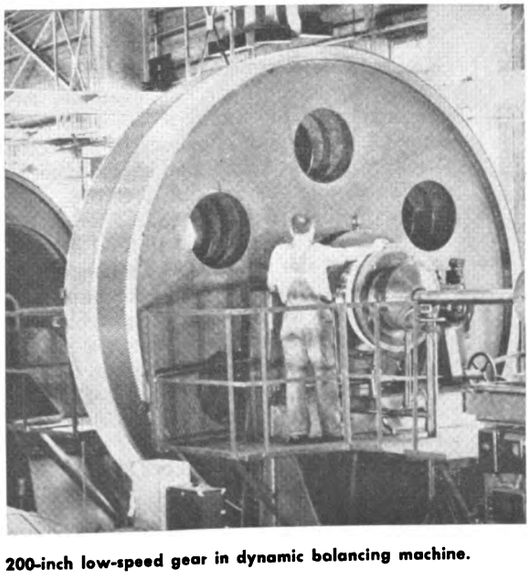
To summarize then while the output curve does not give directly the percentage effect on steam rate for changed inlet conditions, it does give the net output change. Generally speaking for the steam conditions shown on the output curve, the ratio of theoretical available energies may be used for determining approximate new steam rates at given load points.

Change of Exhaust Pressure

A change of exhaust pressure of a condensing turbine will usually affect the steam rate appreciably because the available energy change is considerable with small absolute values of exhaust pressure difference. For example, using the previous inlet steam conditions of P_1=450 lb per sq in gage, t_1=750° FTT, and P_2=1.5 in. Hg, we may vary the exhaust pressure and note the theoretical available energy change:



Large marine propulsion gear being pin checked at GE Lynn River works.



200-inch low-speed gear in dynamic balancing machine.



GE main gear installation going aboard a new Esso tanker.

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R. J. BROWN, Assistant Turbine Engineer of General Electric Company, who presented the accompanying paper on operation and maintenance of steam turbines and gears.

P_2	Theoretical Available Energy
1.0 in Hg	503 BTU per lb
1.5 in Hg	483 BTU per lb
2.0 in Hg	469 BTU per lb
2.5 in Hg	457 BTU per lb
3.0 in Hg	449 BTU per lb

Theoretical Available Energy Change Difference	% Difference
+23 BTU per lb	+4.7
0 BTU per lb	0.0
—14 BTU per lb	—2.9
—26 BTU per lb	—5.4
—34 BTU per lb	—7.0

Actually the steam rate gain with decreased exhaust pressure is not so great as indicated, since the overall efficiency of the last stage (where practically all the output change occurs for the relatively small exhaust pressure changes shown) is appreciably affected by the loss of the so-called leaving or residual velocity energy in the steam leaving the bucket, and again by the loss of energy due to the pressure drop required to move the steam from the exhaust hood of the turbine through the exhaust flange opening and into the condenser. Both of these losses are a function of the volume flow and as the specific volume of steam increases very rapidly with decreased exhaust pressure the losses likewise increase.

In terms of output, the output curve demonstrates the effect of exhaust pressure change. For example, for the typical 6000 HP main propulsion set at rated load, the output curve shows as follows:

P_2	Output Change	% Output Change
1.0 in Hg	+160 HP	+2.5%
1.5 in Hg (rated)	0 HP	0.0%
2.0 in Hg.	—180 HP	—3.0%

It follows, therefore, that exhaust pressures for marine condensing sets should be as low as possible without, however, in order to obtain it, having undue loading of the auxiliaries as circulating water pump and air ejector. This latter should obviously be considered when judging in a practical case the gains to be realized from decreased exhaust pressure.

Effect of R.P.M. Change

The effect on overall steam rate of RPM change for main propulsion sets is basically one of efficiency change throughout the turbine since the steam velocity to wheel velocity ratio in each stage is changed. (In addition the wheel windage friction losses are also affected.) However, at rated load and speed the efficiency curve as plotted against speed is fairly flat, and for the relatively small RPM changes of approximately up to 10% that may occur in a vessel, the overall efficiency of the turbine will not change perhaps more than 1 to 2%. This again is apparent from the Fig. 1 output curve where for example at a rated output of 6000 HP, a decrease of shaft RPM from 92 to 80 or 13% (which would probably be an extreme case) results in an output reduction of about 150 HP or about 2½%.

Valve Control

Valve control and its resultant effect on steam rate is an item which is generally pretty well recognized. Basically it involves the elimination as much as possible of an initial throttling loss or loss of theoretical available energy in each unit of steam. In the generator set it is automatically taken care of by governor control of valves in the gear propulsion sets it is normally taken care of by hand control of valves, both of which in small steps vary the nozzle area to the first stage of the turbine. By this variance of nozzle area the flow (and thus the output) is controlled without affecting the theoretical available energy of the steam to the turbine.

Referring again to the output curve an idea may be obtained of the actual losses caused by throttling. For example, assuming constant output if the reference line for the example shown is projected back from the 440 lb per sq in gage 12 control nozzle point to the 15 control nozzle point the pressure resulting would be 398 lb per sq in gage. If the total heat or enthalpy of the inlet steam be considered constant, as would be likely the case, then the flow in weight will be proportional to the absolute pressure times the nozzle area (with unrestricted nozzle flow in first stage), or $F_1 = Kx455x(12+12) = Kx10900$ nd $F_2 = Kx413x(12+15) = Kx11150$ or $F_2 = \frac{11150}{10900} xF_1 = 1.023\ F_1$ which is 2.3% increase.

For comparison the theoretical change based on available energy and neglecting turbine efficiency change would be:

$$\left[1 - \frac{\text{Available Energy 2}}{\text{Available Energy 1}}\right] \times 100 =$$

$$\left[1 - \frac{474}{480}\right] \times 100\% = 1.26$$

It will be seen then that for main propulsion gear sets the opening of too many hand valves in the turbine and the subsequent throttling of the inlet steam is not good operation.

(This latter, incidentally, may raise the question concerning outputs desired between those obtained with fully open-hand valve combinations. Practically, the increments of available valve openings are designed to be small enough that the partial opening of the next valve should not be necessary, unless of course operation were on an exact RPM basis. If this should be the case, however, it may be interesting to note that there will be no appreciable difference in performance as to whether the throttling is done on the maneuvering valve ahead of the control valve with the hand valve being fully opened or whether the maneuvering valve is left wide open and the throttling is done on the hand valve above its half open position. For outputs lower than this, it is definitely better to throttle on the hand valve.

Bleeding Steam From Turbine

Extraction demand or the bleeding of steam from the turbine casing at selected points has beneficial effects on the turbine itself aside from the overall plant gains obtained by the use of extracted steam for feed water heating, general purpose heating, and steam supply to evaporators and other apparatus.

From a turbine steam design point of view in the range of power met in condensing steam turbine marine practice, it is beneficial to have the largest possible flows in the high pressure end and the smallest possible flows in the exhaust end of the unit, and it will be apparent that extracting steam from stages does just this.

In the former case in the high pressure end of the turbine the leakage areas of packing, which are pretty well fixed by mechanical design factors, will have a proportionately less effect as the normal nozzle and bucket areas are enlarged for increased flows. Also, as the nozzles and buckets are increased in height, the net effect of steam friction on the steam path walls decreases in proportion to the total flow passed. (Actually, though, in most marine units of moderate power, the high pressure areas may not principally be a function of the extraction steam as the designed areas will probably be determined by overload flow margins or the ship builder's request that rated power be made available at reduced inlet pressure.)

On the exhaust end the reduction of flow will always reduce the exhaust hood loss previously noted as the pressure drop required to move the steam from the turbine exhaust casing to the condenser. Also, for the given last stage bucket exit

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area, the required residual velocity or leaving velocity required to get the steam out of the bucket (all of which is a net loss to the stage output) will be reduced. While this may not be termed a decrease of steam rate, as this notation is not directly applicable for the turbine when steam is being extracted, it does result in a net output gain due to decreased losses.

Steam Seal Regulation

Proper steam seal regulation is essential to efficient operation as on the minimum end it affects directly the minimum exhaust pressure that can be attained and on the maximum end represents a direct loss of steam with available energy to the condenser.

Generally speaking, a pressure of 1 lb per sq in gage in the seal supply chamber of the packing gland or approximately 2 lb per sq in gage in the seal supply piping (when packings are in good condition) is sufficient to obtain satisfactory sealing. The pressure may be held either by automatic regulators or by manual control. Unfortunately, steam seal gages are apt to be remotely mounted, have zero setting errors, and have large water legs which may not be corrected for by calibration or be taken account of by operating personnel with the result that a close setting of the steam seal pressure is not made.

(One simple check on proper sealing pressure is to shut off the gland exhauster and regulate to have a moderate blow from the exhaust end packing of the turbine, whereupon the gland exhauster is then returned to service to just stop the blow.)

In the regulation of steam seal under load conditions where sufficient steam leakage from the high pressure end of the turbine is available to seal the low pressure end, the excess steam should be dumped to the lower pressure stage opening of the turbine when provided. The automatic steam seal regulator performs this function along with supplying outside steam seal when needed at light or no load conditions, and thus for good turbine performance it should always be kept in good operating condition.

Lube Oil Temperature

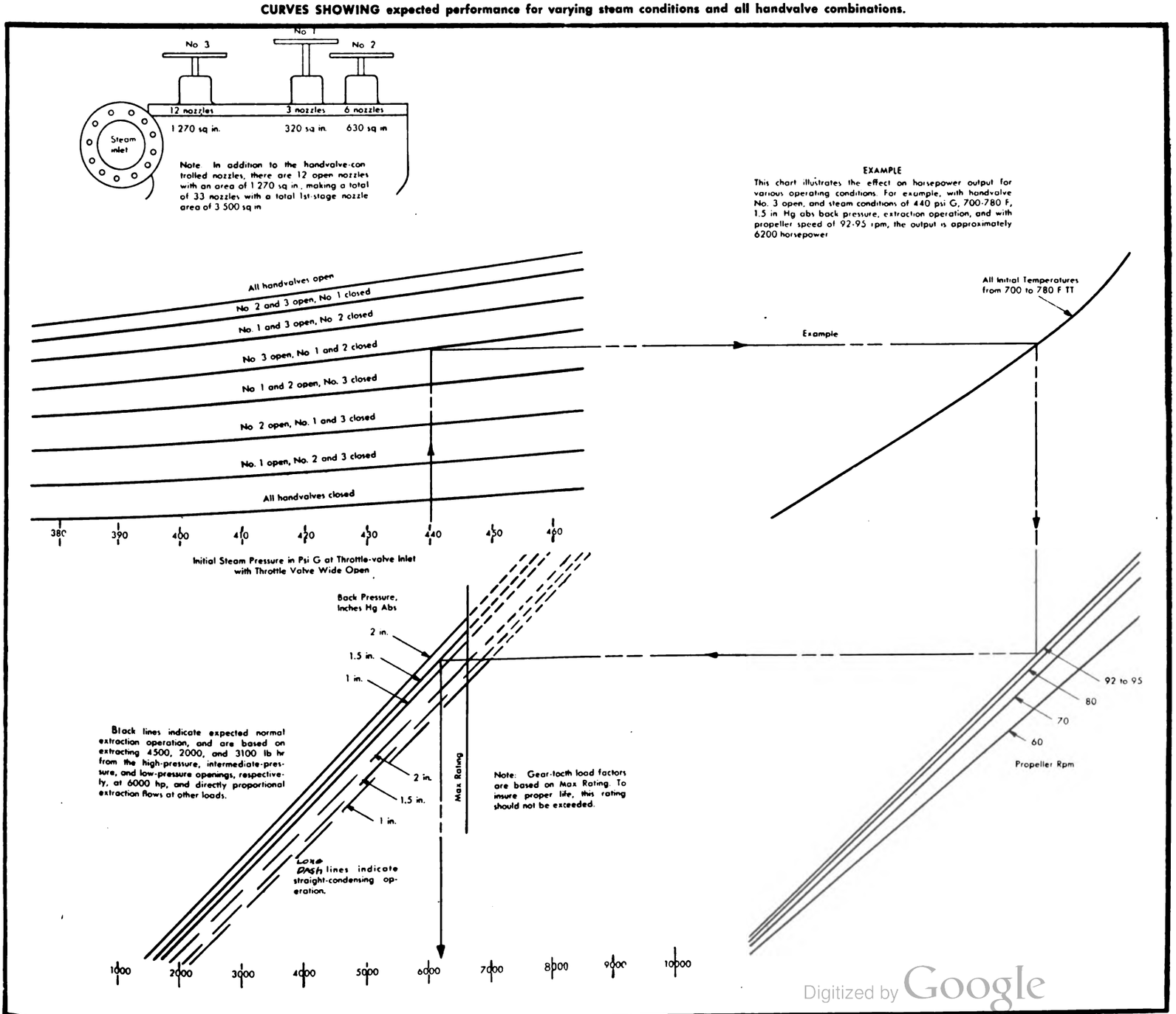
Lubricating oil temperature affects steam rate simply as it affects the bearing friction losses incurred by the viscosity effects of the oil. Since the viscosity of lubricating oils varies rapidly with temperature, operation at temperatures (as far as a given oil is concerned) below that prescribed by the manufacturer is wasteful. The magnitude of this loss may be gathered by the fact that for a typical 6000 HP main propulsion set including the gear reducing the oil inlet temperature from a 120°F normal to 100°F low results in a loss of about 75 HP or 1½% in output.

Effect of Vibration

Sudden vibration is included here as it

(Continued on Page 48)

CURVES SHOWING expected performance for varying steam conditions and all handvalve combinations.



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MARITIME COMMISSION'S NEW

PROTOTYPE SHIP

New C3-S-DX1 to cruise at 18.5 knots with 12,500 SHP geared turbines

The United States Maritime Commission has announced details of its prototype cargo vessel design, known as the C3-S-DX1.

The vessel features a curved raked stem and cruiser stern, with two complete decks, namely: main and second decks fitted fore and aft. A third deck, below the second deck is fitted forward of the machinery space. Aft the machinery space the third deck is formed by a flat carried across the vessel at the level of the tunnel top.

The ship will be built as a full scantling type with minimum freeboard to the main deck. In order to facilitate ready conversion to shelter deck type, there will be incorporated the necessary structure for later installation of tonnage hatch and well and tonnage openings. Further to this purpose, nine inch hatch coamings will be fitted in way of all second deck hatch openings, and the arrangement of second deck will not impede required access to tonnage openings.

Hull Construction

The vessel will be constructed of steel on a transverse system of framing. Shell butts and seams will be welded throughout except that the shell seam at the upper turn of the bilge will be riveted for at least the midship half length. Connection of sheer strake to main deck stringer will be riveted gunwale angle. Main deck will have a riveted seam strap outboard of hatch sides port and starboard. In general, all other connections will be welded.

Hatches will have corner pillars with hatch girders and deck girders designed to suit this arrangement of deck supports.

Decks in the superstructure will generally be supported by a system of pillars and girders. Ordinary partition bulkheads of the joiner type will contribute no support to decks over. However, where steel bulkheads are required to resist racking, or for house envelope, or firezoning, they will be used as deck supports to replace pillars and girders when possible.

Foundations will be of welded construction throughout.

Five cargo holds are provided, three forward of the machinery spaces and two aft.

Cargo Handling Equipment

Clear hatch openings 40′x22′ in the decks of holds numbers 2, 3, and 4, are dimensioned primarily with the view to wartime service requirements. Hold numbers 1 and 5 will have clear hatch openings of 24′-9″x16′-0″ and 35′x22′ respectively. Notwithstanding these long hatches, seven main transverse watertight bulkheads have been spaced throughout the vessel's length to provide a subdivision standard such that any one compartment may be opened to the sea without the probability of the loss of the vessel.

Overhead loading has been provided for each hold. The spacing of transverse bulkheads is such that with the double ganging of numbers 2, 3, and 4 holds, approximately equal amounts of cargo cubic are distributed under each set of cargo handling gear. A table of capacities appears below.

Masts and Booms

Booms of tubular or tapered steel construction of 5 and 10 ton capacities will be mounted on the base of the kingposts. The length of the booms will be such that when topped to an angle of 45 degrees, they will have an outreach over the side of the ship of 18 feet.

A tubular steel mast to support radar gear will be located on top of pilot house.

Topmasts will be provided on centerline of truss girders between kingposts at frames 40 and 122.

Steel kingposts without rake will be cross-connected at the top by truss type girders with steel cantilever outriggers, extending outboard of each kingpost in line with inboard girders. Girders and outriggers will provide support for gear required to suit vang and topping lift riggings.

All five and ten ton booms will be rigged in such a manner that each unloaded boom can be positioned and fixed by means of power over any point within range of the boom. Thirty-two electric motor driven topping winches are provided for this purpose.

Five and ten ton booms will be stowed horizontally. One 50 ton boom stowed vertically will be mounted on a pedestal on centerline of ship at the after end of number 2 hold.

Weather deck hatch covers will be steel pontoon type with the exception of an experimental installation of a watertight quick opening cover on No. 1 hatch. 'Tween deck covers will be wood supported by built up steel beams.

Deck Equipment

Deck and mooring fittings will be of welded construction wherever feasible.

The tank top plating will be increased in thickness to compensate for elimination of wood ceilings. Sparring will be nominal 2″x6″ Douglas Fir as required by A.B.S.

The cargo winches will be of the single drum, double reduction gear, D.C. electric motor driven type with motor and electric brake mounted on the winch bedplate and controls and resistors arranged for mounting in deck houses. The first reduction gears will have cut herringbone teeth and the second reduction gears will have cut spur teeth.

There will be provided one motor driven combined windlass and warping winch of the horizontal type designed for anchor handling and warping.

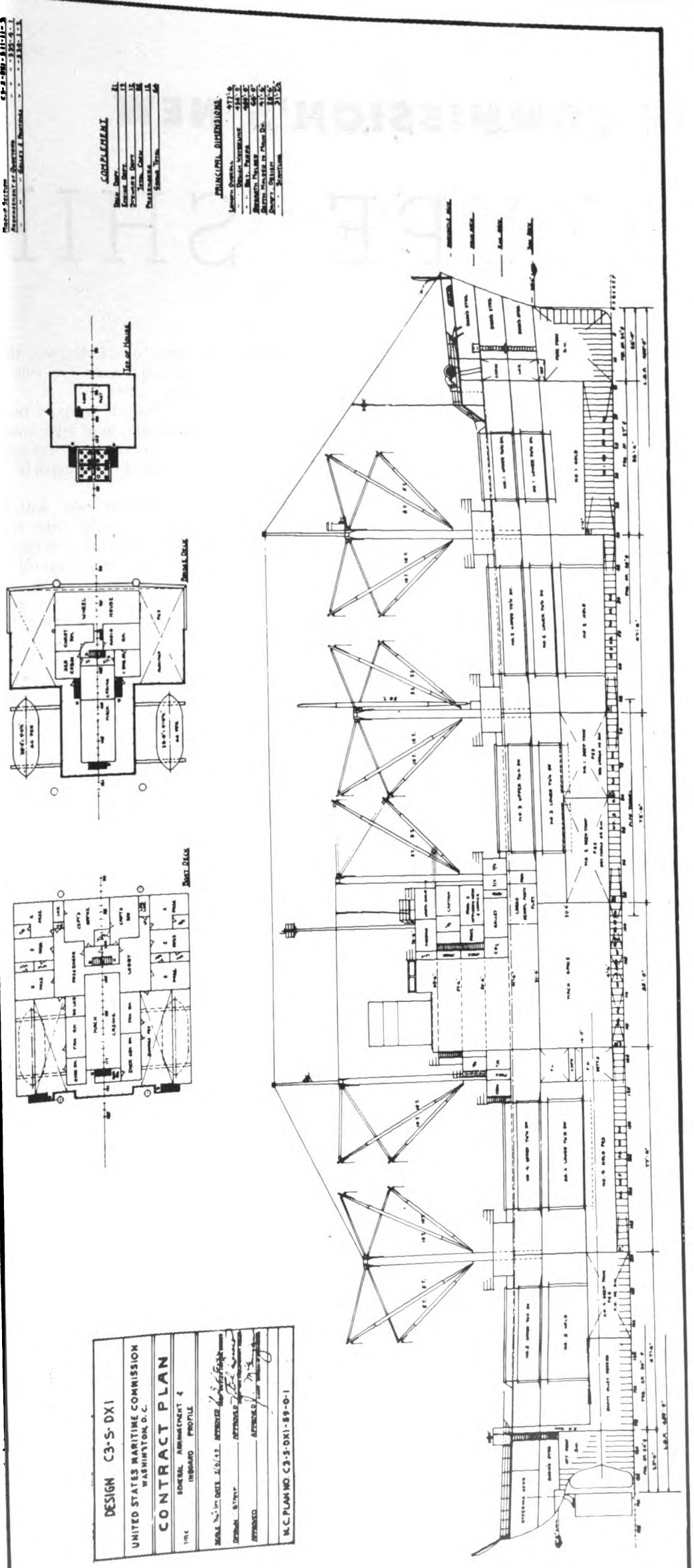
There will be provided two electric motor driven reversible vertical capstans located on the after deck with the driving machinery located below deck.

Deep tanks for clean salt water ballast or dry cargo are fitted over the entire length and breadth of number three hold extending from the tank top to the third

GENERAL CHARACTERISTICS

Length Overall	477′-6″
Length Between Perpendiculars	450′-0″
Beam, molded	66′-0″
Depth to weather deck	41′-6″
Sheer, forward	9′-2″
Sheer, aft	4′-7″
Straight Camber, weather deck	1′-0″
Heights, deck houses except wheelhouse	9′-0″
Height, wheelhouse	8′-0″
Height, 2nd to weather deck at side	10′-0″
Height, 3rd to 2nd deck	11′-0″
Height, B.L. to T.T.	4′-6″
Draft, Design Load Waterline	28′-6″
Draft, Scantling	31′-3″
No. of Transverse W.T. Bhds.	7
Gross Tonnage (approx.)	8800
Net Tonnage (approx.)	5300
Complement:	
Officers and Crew	52
Passengers	12
Life Boat Capacity (Total)	132
Cargo (cubic feet bale) approx.	553,400
Tank Capacity (approx.):	
Fuel Oil, Normal	2220 tons
Fresh Water	150 tons
Machinery:	
Type	Geared Turbine
	850 lbs.
Pressure and Temperature	sq. in/890°F.
No. of Screws	One
SHP, Normal	12500
Speed, Sustained @ 27′ Draft	18.5 Knots
Evaporator Capacity	2-8000 G.P.D.
Generating Plant Capacity	3-300 KW
TOTAL DEADWEIGHT (28′-6″ draft)	10500
LIGHTSHIP (approx.)	5400 tons
TOTAL DISPLACEMENT (28′-6″ draft)	15900

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deck. This installation will eliminate delay and expense of procuring, stowing, and removing fixed ballast on return voyages without cargo. It will be suitable for possible adaptation to carry C.O. if so desired by operators.

In accordance with the Commission's past practice in constructing standard cargo vessels, it is contemplated that changes in detail or arrangement will be accomplished to suit special requirements of individual operators purchasing ships to this basic design.

Main Propulsion

The main propelling machinery will consist of a cross compound double reduction geared turbine of the latest marine design, driving a single propeller through a line of shafting at about 90 revolutions per minute and delivering 12,500 shaft horsepower at the propeller. It will be capable of continuous operation at 10 per cent overload. Steam will be generated by two water tube boilers and delivered at the throttle at 850 psi gage pressure and 890 degrees fahrenheit total temperature. Boilers will be fitted for burning fuel oil under forced draft. A cruising radius of about 14,000 nautical miles is to be obtained with this machinery operating at 12,500 shaft horsepower.

In general, the auxiliaries are motor driven, deriving their power from a turbine generating plant consisting of three 300 KW sets, any two of which will be capable of carrying the normal sea load of the vessel.

Possible alternate installations of geared diesel or other types of main propulsion units have been considered in the arrangement of the engine room main transverse watertight bulkheads. If necessary, the forward engine room bulkhead may be shifted forward up to three frame spaces to provide space for larger machinery plants. Although loss of cargo cubic unavoidably results therefrom, the subdivision standard is not impaired.

Casings above the second deck have been proportioned to accommodate the largest machinery installation without change, thus enabling a single standard arrangement of deckhouse regardless of type of main propulsion machinery installed.

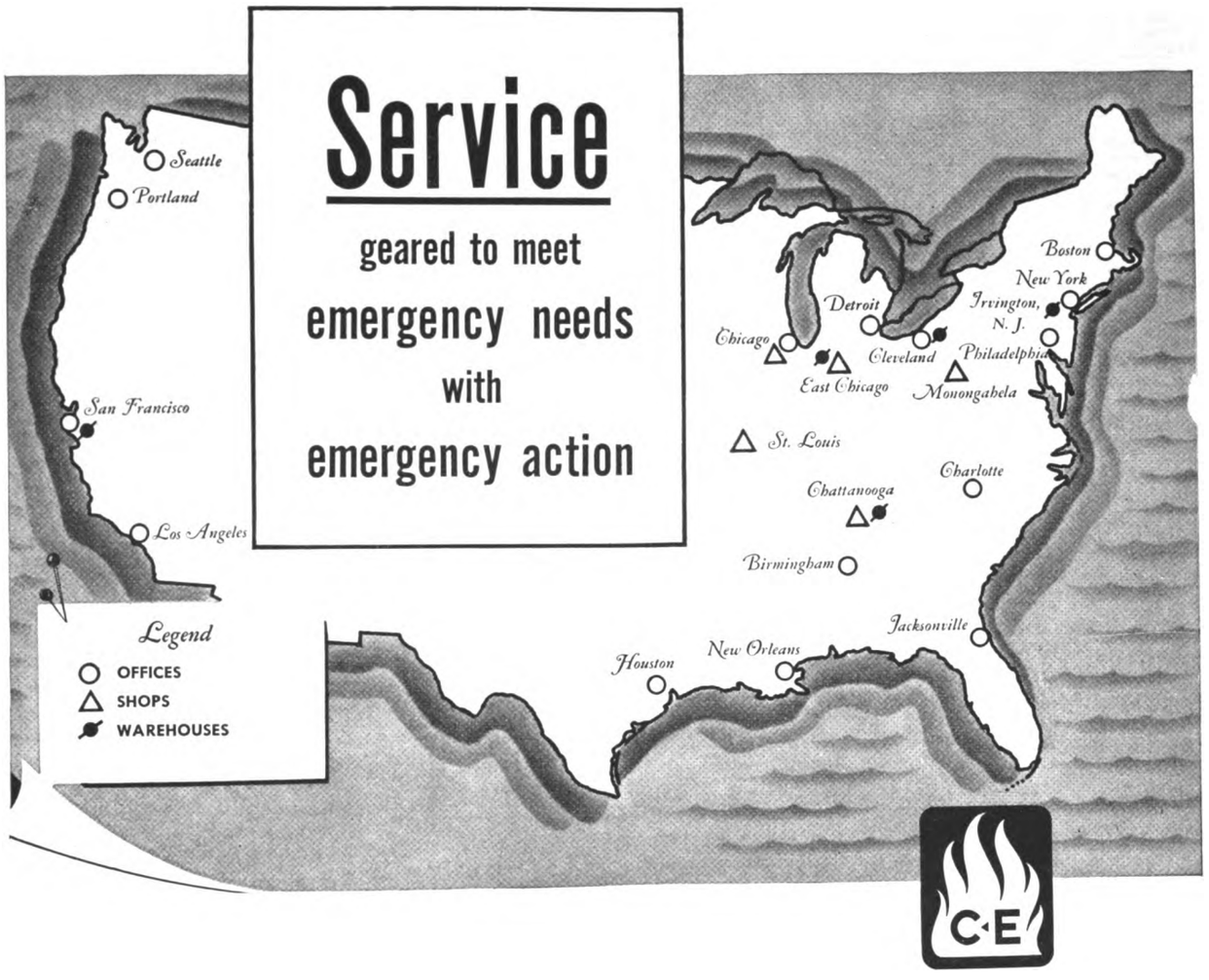
A pipe tunnel will be provided in the inner bottom under the deep tanks in No. 3 hold.

Two double effect low pressure combined evaporator distiller units each having a normal capacity of 8000 gallons per 24 hours will make the vessel self sufficient as to fresh water requirements. The ship will be equipped with a complete domestic fresh water combined system for washing and potable water.

Two steel accommodation ladders will be provided having a top swivel platform, feathering treads and rails and dock side rollers.

Ground tackle equipment will be furnished in accordance with the requirements of the rules of the American Bureau and an equipment numeral of C=41. Cable will be forged steel, stream line and towline will be wire rope and haw-

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SERVICE — what generalities and platitudes are tossed around in thy name! *But not here.* Following are three brief factual statements — chosen from several recent, similar cases — that highlight Combustion service.

Case 1. Here's a case of a ship that arrived at Tacoma, Washington, with one boiler badly damaged — virtually "Burned up." "Standby for emergency service" reached us on a Wednesday. By Friday detailed inspection had determined extent of damage which required (a) all new boiler tubes, (b) all furnace water wall tubes, (c) new superheater elements and supports, (d) air heater tubes and (e) flame plates. By virtue of adequate stock piles, work of assembling and preparing that large supply of material commenced that same night and continued through Saturday (all overtime). By Sunday it was ready and took off in a chartered C-54. All material was delivered in Tacoma on Monday. A hectic weekend cleaned this one up.

Case 2. Late one recent afternoon (4:45 P.M.) our Pacific Coast representative wired New York for information relative to supplying a new economizer header for a C-E equipped tanker. At 5:20 P.M. the customer phoned about the same matter. All details were resolved, and an order placed then and there. At 5:45 we phoned our East Chicago shop. Header delivered to airport same night. The next day it was aboard ship.

Case 3. In this instance a ship arrived in Baltimore on Saturday needing some superheater elements. The owner's Marine Division contacted us at once (why does it always happen on weekends?) explaining the great urgency for repairs. Well — we had the material in our Irvington, N. J. warehouse, and later that afternoon a truck picked it up. It was delivered aboard on Sunday.

Emergency stuff? Sure it is. But here is emergency service that reflects the Combustion point of view — the cooperative attitude, the adequate inventory of replacement parts, the staff of competent Service Engineers and the willingness to help out — that carries through to the routine maintenance and repair job. Five shops, four warehouses and fifteen offices (some with 24-hour service) are strategically located to serve the East, West and Gulf Coasts and the Great Lakes area. They represent the Combustion answer to SERVICE — *when* and *where* you need it. B-323

COMBUSTION ENGINEERING— SUPERHEATER, INC.

200 Madison Avenue • New York 16, N. Y.

All types of steam generating, fuel burning and related equipment for stationary and marine applications.
Pacific Coast: P. L. Johnson Co., Monadock Bldg., San Francisco, and Petroleum Bldg., Los Angeles

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SALT WATER BALLAST TANKS

Forepeak Tank	—Tons @ 35 cu. ft/ton	114
No. 1 Deep Tank P & S	—Tons @ 35 cu. ft/ton	966
No. 2 Deep Tank P & S	—Tons @ 35 cu. ft/ton	1195
Afterpeak Tank	—Tons @ 35 cu. ft/ton	60
TOTAL		2335

DRY CARGO

No. 1 Hold	Bale	Cubic	52 800
No. 2 Hold	Bale	Cubic	125,400
No. 3 Hold	Bale	Cubic	149,200
No. 4 Hold	Bale	Cubic	144,400
No. 5 Hold	Bale	Cubic	81,600
TOTAL			553,400

FUEL OIL

No. 1 Dbl. Bottom P & S	—Tons @ 37.23 cu. ft/ton	311
No. 2 Dbl. Bottom P & S	—Tons @ 37.23 cu. ft/ton	148
No. 2 Dbl. Bottom C.L.	—Tons @ 37.23 cu. ft/ton	167
No. 3 Dbl. Bottom P & S	—Tons @ 37.23 cu. ft/ton	271
No. 3 Dbl. Bottom C.L.	—Tons @ 37.23 cu. ft/ton	141
No. 4 Dbl. Bottom P & S	—Tons @ 37.23 cu. ft/ton	228
No. 4 Dbl. Bottom C.L.	—Tons @ 37.23 cu. ft/ton	42
No. 5 Dbl. Bottom P & S	—Tons @ 37.23 cu. ft/ton	189
No. 5 Dbl. Bottom C.L.	—Tons @ 37.23 cu. ft/ton	195
No. 3 Deep P & S	—Tons @ 37.23 cu. ft/ton	128
No. 4 Deep P & S	—Tons @ 37.23 cu. ft/ton	288
Settlers P & S	—Tons @ 37.23 cu. ft/ton	113
TOTAL		2221

Note: The above capacities are subject to some variation if alternate lines are adopted.

sers and warps will be manila.

Two 28'-0"x9'-9½", 66 person, hand propelled life boats will be installed as shown on plans in gravity type davits.

The commissary spaces are arranged to provide a complete messing service adequate in every respect for the convenient and proper service of the full complement of the vessel with equipment of the latest, most approved type for the service to be rendered. Galley ranges will be fully automatic, electric.

Crew and Passenger Quarters

Six large staterooms accommodate 12 passengers on the boat deck. The entire complement of passengers, officers, and crew are quartered in the midship house all with comfortable outside rooms. In no case are there more than three crew members berthed in one room. All bulkheads separating the rooms and other joiner work therein are of incombustible type, as are the furniture in crew's and passenger quarters. This feature complies with Senate Report 184 and exceeds the Coast Guard's regulations which do not require incombustible furniture and joiner work on cargo ships.

Zoned mechanical supply and exhaust ventilating systems designed for quiet operation serve the accommodations. All mechanical ventilation systems which supply accommodations, commissary, and laundry spaces are equipped with filters suitable for the service involved. The portions of cargo holds 1, 2, 3, 4, and 5, suitable for carrying dry cargo including deep tanks and hatch trunks, will be fitted with mechanical supply and exhaust systems incorporating dehumidification equipment supplying dry air in order to prevent the formation of sweat in these spaces. Automatic (pneumatic) dampers are required to control the dry air supply to each hold. These dampers will have remote control from the chart room and manual control at location.

Heating for accommodation and public spaces is accomplished by means of hot blast heaters installed in the zoned mechanical supply ventilation systems supplemented by convectors in spaces with high exposure losses. Galleys and pantries are supplied with tempered air. The wheel house is heated by finned piping. Other spaces requiring heat are fitted with convectors.

A smoke detection system providing visible and audible smoke detection and registering in the wheelhouse, will be installed in all cargo holds including 'tween deck spaces, and in paint and lamp rooms, and other spaces as required.

Fire extinction provisions consist of a water system served by pumps through firemains; a CO_2 smothering system protecting all cargo holds, all cargo 'tween deck spaces, machinery spaces, paint and lamp rooms, etc.; and portable fire extinguishers. In addition to the fixed CO_2 systems there will be installed in the machinery space, a hose reel carbon dioxide unit having two 50 pound CO_2 cylinders capable of reaching any part of the space.

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Todd Yards Complete Turkish Ship Conversions

(Continued from Page 27)

meet the 1929 Safety-at-Sea regulations.

The new names of the three Chilean Line vessels are: former ACONCAGUA is now the GIRESUN; the former COPIAPO is now the ORDU; and the former IMPERIAL is now the TRABZOK.

According to the head of the Turkish purchasing commission, the acquisition of these four ships brings to a total of 17 ships—10 cargo carriers and tankers and 7 passenger-cargo vessels—that the Turkish Government has purchased from the U. S. Martime Commission since the war. Last year Todd completed the conversion of the ISTANBUL, flagship of the Turkish fleet, as well as several Victory ships and a T-2 tanker.

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La Guardia Gets New Type Siporter

(Continued from Page 25)

booms and running rails may be raised high enough to give walking head room of 6' 3" under the booms in the way of the fore and aft passages when the machine is stowed during the voyage. If there is sufficient space (approx. 31') between fore and aft passages, head room under the booms is not important. In this case, the machine will stow between the passages.

For normal cargo pallets of 6' x 6' a side port opening of approximately 8' width is required and athwartship passage width of 10' is required.

The athwartship passage, of course, must be located at a deck level which will be sufficiently above the water line under all conditions of ship loading so as to permit the side port gear to operate over the dock and the lighters.

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WASHINGTON Report

(Continued from Page 22)

during such year on the mortgage indebtedness on such vessel.) (Sec. 14)

(2) Subsidized operator permitted to increase regular depreciation deposits in capital reserve fund by additional deposits as depreciation charges on subsidized vessel from earnings otherwise available for distribution to stockholders, or from amounts otherwise required to be deposited in special reserve fund if amounts on deposit are sufficient to meet recapture obligations, provided amount deposited in any year with respect to particular vessel does not exceed fifteen per centum of cost of vessel. (Sec. 16)

Depreciation Charges on Reconstructed Operating Subsidy Vessel

Operator of reconstructed operating-subsidy vessel permitted to require Commission to recompute life-expectancy of such vessel, and depreciation charges on such vessel for capital reserve fund deposits to be computed on life-expectancy determined. (Secs. 15 and 16)

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U. S. Lines Transports First "Palletized" Whiskey

For the first time in the history of shipping whiskey across the Atlantic, a new method of handling this valuable cargo has been introduced by the United States Lines. Until now cases of whiskey were handled individually. The new method provides for "palletizing" the shipment before it is loaded aboard ship.

The "pallets" are specially constructed wooden platforms on which 48 cases or 56 cartons of whiskey are stacked in one compact cube. The cases are then made secure to the pallets with metal banding strips to form one solid form instead of 48 individual boxes.

The advantages of this new method of shipping whiskey are many, but the principal one is the reduction in breakage, a costly item to importers on this side. This new method also results in less handling of individual cases and consequent economies to the distillers abroad and the importers on this side.

The first shipment aboard the AMERICAN REPORTER, which was discharged at Pier 59, North River, consisted of 1800 cartons and 200 wooden cases.

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THE SOCIETY OF PORT ENGINEERS

Columbia River Engineers Hold Annual Election

At the annual meeting of the Society of Port Engineers, Columbia River Area, a discussion of salvage operations was led by Erling Jacobsen of Fireman's Fund Insurance Company and Morris Devine

THE SOCIETY OF PORT ENGINEERS, LOS ANGELES . . . Top row, left to right, GEORGE CURRAN, American-Pacific; DICK BARTON, General Electric; SPENCER GORDON and P. F. FLAIG, General Electric; FRED CORDES, Hillcone Steamship Co.; W. K. PATTERSON and C. E. WHALEN of the Crane Company and DAN DOBLER, Texas Oil Co., president of the Los Angeles Society.

SAN FRANCISCO PORT ENGINEERS . . . Second row, left to right, HOBBS MERLE and AL DE VOTO, Harbor Supply Co., MARSHALL T. J. GARLINGER, United States Army Transport Corps and NORMAN BROWN and TOM BREWER of the Norman Brown Co.; DICK ASHBY, Harbor Supply Co., WALTER B. HILL, C. C. Moore & Co., Engineers; HARRY MARTIN, Moore-McCormack Lines and JOHN R. STOKES and CHARLES GREEN, M. J. Gigy & Associates; L. R. (BUD) ALLEN, Pacific Tankers.

Third row, left to right, Rear: HARRY THOMPSON, Ocean Agencies, and RITCHIE L. DUNN, New Process Service Co. Front: JIM FRICKE, marine surveyor; JOE LEWIS and MARTIN BENNCHE, chief of U.S. Army Transport. GENERAL EDWIN PATRICK; GEORGE MILLER, Pacific Tankers; BILL HEIN, Pacific Ship Repair.

SOCIETY OF PORT ENGINEERS OF PUGET SOUND . . . Bottom row, left to right, HARRY W. PENNINGTON, Crane Company; M. W. FELTON, Alaska Steamship Company, Society president; R. B. KIFFIN, Crane Company; AL SOLIBAKKE, Puget Sound Freight Lines, Society membership chairman; C. E. McDANIEL, Fairbanks-Morse and Company.



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of Devine and Zimmerman Diving Company. The meeting concluded with showing of film: "Salvage of The DIAMOND KNOT," and election of officers for 1949-1950.

Elected are Kenneth Webb, U. S. Salvage Association, president; H. G. Martell, The Texas Company, vice-president; and Al Ford, Westinghouse Electric Corporation, secretary-treasurer.

Named to the board of governors are: James Slater, Boiler and Engineering Supply Company; Stanley E. Watt, Matson Line; Matt Trout, Marine Electric Company; Don Bartosch, Combustion Engineering Company; Jack Waters, Pope and Talbot, Inc.; and Clyde Teeling, Willamette Iron and Steel Company.

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LA and Seattle Port Engineers See Crane Co. Film

A Crane Co. colored sound motion picture "Life Lines of Industry" was shown before the Society of Port Engineers of Puget Sound at its May meeting at Seattle and The Society of Port Engineers, Los Angeles, at its June meeting at Wilmington.

The picture took its audiences on a half-hour tour through the 160-acre Crane plant at Chicago and showed them the intricacies of valve manufacturing. Engineers at both meetings declared the film most interesting and educational.

At the Seattle meeting Harry W. Pennington and R. B. Kiffin represented the Crane company and answered questions and at the Wilmington meeting C. E. Whalen and W. K. Patterson were there from the Crane office.

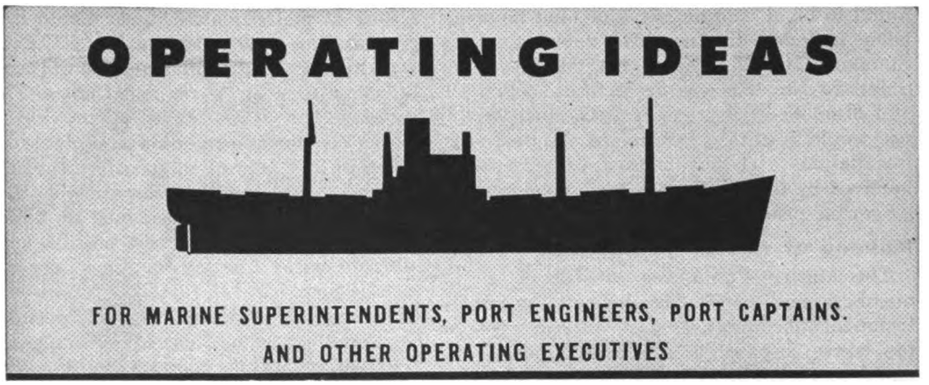
Both these port engineers' societies plan summer picnics, the Puget Sound group planning its affair on July 23rd at French's Pine Lake resort and the southern organization contemplating an outing in August, probably at Palos Verdes Park. Don Wilson, American Bureau of Shipping, heads the Seattle picnic committee and arranging for the southern picnic will be Dan Dobler, The Texas Co., president of the Society; Hampton Neergaard, Burns Steamship Co. and R. R. Campbell, Federal Paint Co.

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Harbor Supply Sponsors Program for SF Engineers

Members of The Society of Port Engineers, San Francisco, at their June meeting, saw and heard an interesting colored sound motion picture explaining the manufacture of metal bellows and temperature controls at the Knoxville, Tenn., plant of the Fulton Sylphon Division of the Robert Shaw-Fulton Company.

The picture was sponsored by the Harbor Supply Co., San Francisco, marine distributors for Fulton-Sylphon. Al De Voto, manager of Harbor Supply, and his staff, aided by Norman Brown and Tom Brewer of the Norman Brown Co., conducted an interesting question and answer period following the picture. The Brown company is the factory representative at San Francisco for the Knoxville company.



SHIPBOARD ELECTRICAL INSTALLATIONS

By WILLIAM H. REED
Electrical Engineer
Bruce Electric Company*

The principle and importance of economical and safe operation of vessels has not changed from the days of sail to today's highly developed steam, internal combustion and electrical methods of ship propulsion and operation.

To keep pace with the changes and developments made through the years, electrically driven and operated devices were made available to meet the ever growing demands. By the results of pure worth, such electrical applications have proved their value and have been accepted as vital to shipboard equipment.

Shipboard electric installations must contemplate the moving of a vessel through extreme degrees of temperature, the vessel's roll and pitch, humidity and action from weather and sea. Equipment and devices for use solely on land installations will fail under shipboard demands and conditions.

It would now appear that there must be an authority whose functions should standardize and recommend types of equipment and devices as well as set forth methods and types of installations for shipboard services. Such functions to have in mind accepted and proven practices in the selection of equipment and devices and methods of installations, bearing always in mind the safety and well being of passengers, operating personnel and the safe and economical operation of the vessel.

The American Institute of Electrical Engineers have set up such a standardizing Committee, known as the Marine Transportation Committee, or as it is generally known "The Marine Committee."

In 1913 the American Institute of Electrical Engineers appointed the first Marine Transportation Committee. Experience in shipboard electric installations, even at that early time, had shown that land commercial equipment used on board ships had not produced trouble-free or satisfactory installations. This first Marine Transportation Committee did a great deal of pioneering work, and in 1917 the results of the Committee's deliberations were first released to the marine industry. This first edition was very simple and related to only a few then seemingly important features relating to the electrical plant.

The Committee was reappointed by the Institute, and in 1920 a more extensive report was published under the heading of:

"Recommended Practice for Electrical Installations on Shipboard."

This title was selected since it described in a few words the purpose of the publication. This thought has been the intent of the Marine Committee ever since, and you will note that the latest edition still includes this wording.

Standard No. 45

This latter publication was so well received by the marine industry that when the next edition was ready for publication in 1927, the Institute decided to designate it as Standard No. 45.

From 1927-1948 four complete new editions and several reprints of Standard No. 45 have been published.

In April 1943, during the war, a supplement to Standard No. 45 was issued. That supplement was identified as Standard No. 45A, and was revised and reissued in January 1944, to be effective only during the National Emergency. The supplement was prepared at the request of, and in cooperation with the War Production Board, and its sole purpose was to effect the conservation of critical materials such as copper, tin, lead, rubber, etc. Some of the substitutes permitted by the War Production Board have been

Extracts from a paper presented May 18, 1949, before the Society of Marine Port Engineers, New York, N. Y., Inc.

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found to be of continuing value, and have been included in the 1948 revision of Standard No. 45. The 1944 edition of Standard No. 45A was declared cancelled and obsolete in September 1945, since its use would result, in general, in shipboard installations of a lower standard than is believed by the Committee to be good engineering practice.

Makeup of Marine Committee

The Marine Committee consists of 26 members and is sub-divided into eight technical subcommittees, each subcommittee being responsible for certain designated sections of the Standard. The work of each subcommittee is acted upon by the Main Committee, which comprises the members of all subcommittees.

It has been the intent of the Marine Committee, from its inception, to include as wide a technical representation from interested organizations as is possible to obtain, keeping in mind that a large Committee is now workable. A reasonable balance must be maintained between various classes of activities

It will be noted that the Recommendations listed in Standard No. 45 are just exactly what the word means. Nowhere in the pages of Standard No. 45 will be found the words "must" and "shall" or any other mandatory wording.

To effect ready and easy reference to the Recommendations printed in Standard No. 45, the publication is divided in seven groups, as follows:

General
Definitions
Direct-Current Equipment and Installation
Alternating-Current Equipment and Installation
Propulsion Equipment
Examples of Connections
Tables

The foregoing seven groups are divided into individual Sections. Each Section is further divided into Subsections. Each Subsection under its own heading deals with its own Recommendation, and in instances where such Recommendation might apply and/or refer to another Subsection, cross references are noted.

Almost all of the Sections of the present issue of Standard No. 45 have been re-written. In most instances the revisions have been made to effect clarification and to avoid ambiguity, without changing the sense or meaning of the Recommendation.

Recommendations

A few new Recommendations have been made to, and some valuable information pertinent to existing Recommendations, are supplied for the present issue of Standard No. 45, that do not appear in previous issues.

The Sections grouped under "Definitions" have been amplified to include such new definitions as have been found essential to the Recommendations.

Section No. 18, titled D-C Wires and Cables, has almost been entirely re-written.

The revision of this Section was effected by the Shipboard Cable Subcommittee of the Insulated Power Cable Engineers Association, known as I.P.C.E.A., working with the Marine Committee's Subcommittee on Wires and Cables. The revision has been made to provide a workable Recommendation acceptable to all manufacturers of shipboard wires and cables. The revised Recommendation standardizes the requirements to effect the manufacture of the best possible obtainable wires and cables for shipboard installations.

The revised Recommendation permits the manufacture and use of certain types of wires and cables found to be of value under war time conditions, not previously recommended.

Also, to Section No. 18 has been added a listing of standard cable designations to facilitate the easy identification of cables, by letters. This will avoid the necessity of using long worded identifying phraseology, as has been the case in the past.

Additional Recommendations have been made in Section No. 36—"D-C Emergency Light and Power System," to supply further information concerning the application of emergency light and power when, where and for how long required.

Bulk Oil Carriers

A new Section, No. 44, has been added to the Recommendations under the title "Additional for Cargo Vessels of the Bulk Oil Carrier Type."

This new Recommendation was prepared by Marine Committee members whose experience has been with the design, building and operation of bulk oil carrier type vessels. These Recommendations are now included in Standard No. 45 as additional Recommendations for electric installations of this class.

The Sections grouped under "Alternating-Current Equipment and Installation" state Recommendations pertinent to the group heading. There have been no outstanding revisions in this group other than for clarification.

The sequence of the Sections in this group follow closely those Sections under the Direct-Current group, with changes in nomenclature necessary to distinguish between the two types of current.

Alternating-Current voltages beyond the 440 volts noted in the Recommendations are being considered. Except for use on U. S. Navy vessels, higher voltages than 440 have not been generally used on merchant vessels. Therefore, no mention will be made in the Recommendations until the use of higher voltages has been further developed.

The Marine Committee have presently under consideration the compiling of a separate Section for alternating-current equipment and installations. The proposed Section will cover that feature only as distinguished from direct-current installations. When such a separation of the two types of installations is in effect, considerable time will be saved by the user of Standard No. 45, in that cross references will be avoided.

The Recommendations continue to cover listings for "Propulsion Equipment." "Connection Diagrams" and "Reference Tables." All Sections under these groupings have been revised and clarified. No outstanding changes, additions or deletions have been effected.

The Recommendations now list Standard Electrical Symbols for Ship Plans.

The symbol list is a compilation of those used on electrical plans by the U. S. Government Departments, naval architects and ship designers and builders. The use of this list by all those interested will result in electrical plans for shipboard installations that can be easily checked, compared and understood.

Equipment and Installations

Now that we have considered the best equipment and installations as Recommended by Standard No. 45, it is quite as important that we look at some present day equipment and installations.

A great many vessels now in commission were built under war time emergencies and conditions. Electric equipment during that period was not manufactured and installed to the high standards of Standard No. 45, due to the shortage of critical materials and the further shortage of competent personnel. Low standards are evidenced in the use of corrosive materials, low grades of insulation and improper applications. In view of these conditions it would seem that such electric equipment and installations should be given close attention and maintenance to insure continuing proper operation.

It is believed that most of you are aware of these conditions. Maybe, they are "sore spots" that must be lived with until such times as they can be corrected.

The United States Coast Guard, in whose hands lie the administrating of regulations governing electric installations on shipboard, will accept such electric installations when made in accordance with the Recommendations in Standard No. 45.

The Recommendations in AIEE Standard No. 45 now are on an equal footing with the National Electric Code of the National Board of Fire Underwriters, for land installations.

The Marine Committee realizes, to the fullest extent, that the success of Standard No. 45 is dependent on its favorable reception by men, like yourselves, who have the responsibility for economical and safe operation of merchant passenger and cargo vessels.

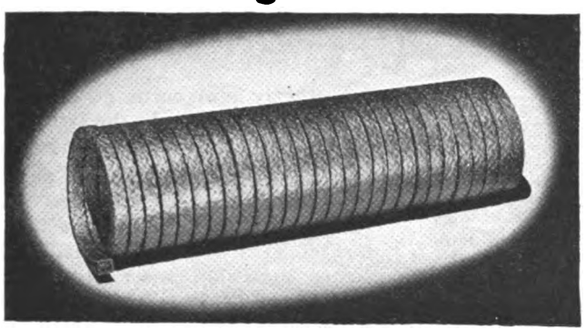
It is sincerely hoped that this comparatively brief presentation of the activities of AIEE Committee on Marine Transportation will in some small way effect a closer mutual engineering interchange of ideas between that Committee and the Society of Marine Port Engineers. Your suggestions and constructive criticisms will be welcomed and given full consideration by the Marine Committee.

The Marine Committee's whole hearted intent is for the best practice for Electric Installations on Shipboard, for the common good of all.

Many thanks for your indulgence.

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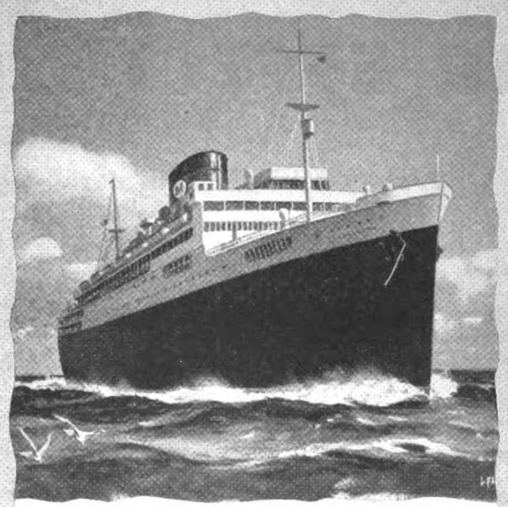
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PROPELLER CHARACTERISTICS THEIR EFFECT ON PERFORMANCE

Problems involved in designing a propeller for a particular ship

By E. V. LEWIS
Naval Architect
George G. Sharp

OPERATING IDEAS



FOR MARINE SUPERINTENDENTS, PORT ENGINEERS, PORT CAPTAINS AND OTHER OPERATING EXECUTIVES

PART I

Propellers

Although the propeller is a vitally important element in the propulsion of a ship, it is generally not given as much attention as the various components of the main propulsion plant. As a result, the effect on performance of changes in propeller characteristics and operating conditions is sometimes in doubt. A brief discussion may clarify a few points for the reader, even though it can only scratch the surface of a vast subject.

Design Problems

The problem of design of a propeller for a particular ship involves a consideration first of the combination of propeller diameter, pitch and revolutions per minute (RPM) which will give optimum propulsive efficiency. Usually the design of propelling machinery will limit the possible range of RPM, and in most cases the lowest practicable value will lead to the most efficient propeller. Likewise the maximum diameter of the propeller will be limited by hull considerations—draft, tip clearances and suitable immersion—but usually the largest practicable diameter is most efficient. Exceptions to the preceding statements sometimes occur when a high RPM limitation results in a smaller diameter, or a small diameter results in higher RPM, but generally the problem simplifies to finding the correct pitch to give the desired RPM on a certain diameter.

Once the basic characteristics of a propeller are determined, there are a great many secondary problems to be solved in order to obtain the maximum overall efficiency. Propellers may be designed with round back or with airfoil sections, with constant pitch or with pitch varying between hub and tip, with various possible area ratios, blade thickness fractions, etc. There are endless possibilities for blade outlines, amount of rake, skew back, etc.

The propeller designer chooses the characteristics which his experience and judgment indicate will give maximum efficiency without sacrifice of blade strength or danger of cavitation. In his work he may draw upon model experiment data, ship trial results and theoretical calculations.

After the completion of a design, a model test of the propeller alone and of a self-propelled model of the ship afford a final check of efficiency and establish whether the design will absorb the engine power at the desired RPM.

Cavitation

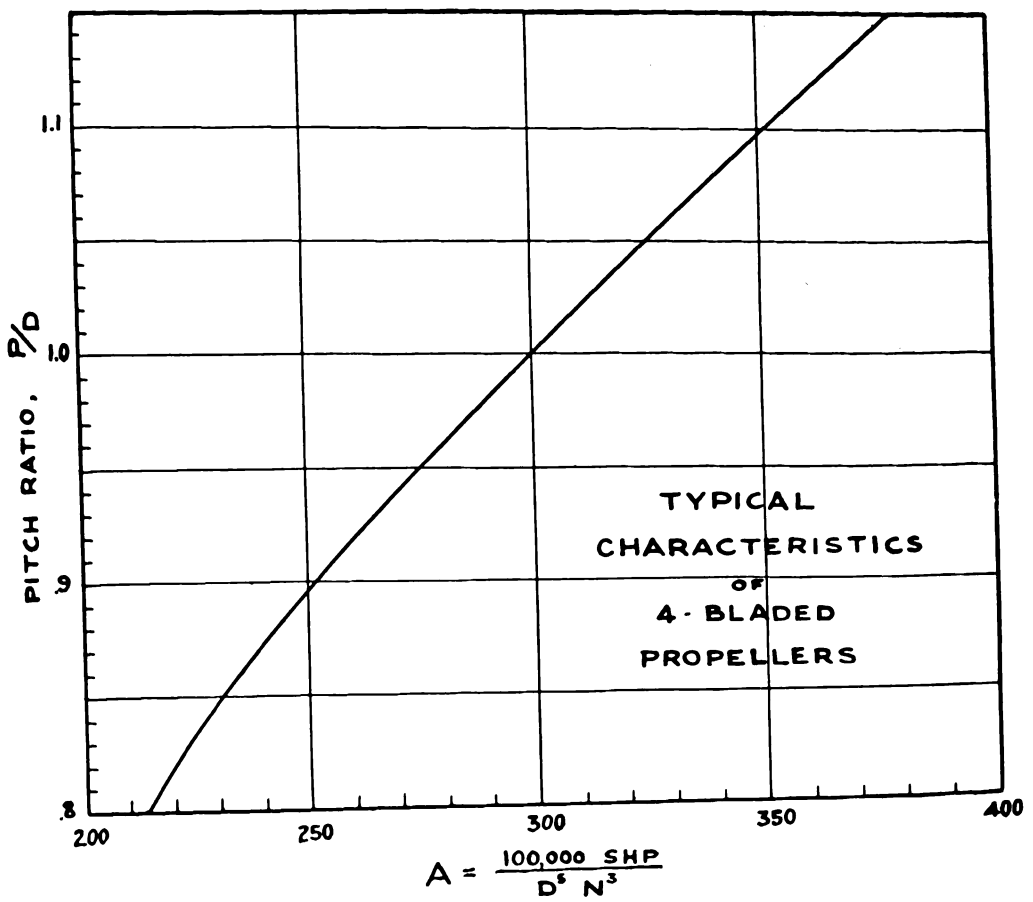
Cavitation is a phenomenon in which cavities or bubbles form in the water at the blade surfaces. It may cause serious erosion of the blades, and when well developed a loss in propeller thrust results. The cavities are caused by the existence of excessively low pressures in the water at the surface of the blades. The most important factors involved are depth of immersion, speed of the blade through the water, especially near the tip, shape of blade section and blade area. If the propeller tips are near the surface, air may be drawn into the cavities, but cavitation may also occur at depths where no air is drawn in. In the latter case the cavities are filled with water vapor.

From experience with past designs various cavitation criteria have been developed, taking into account the factors mentioned above. These enable the designer to make reasonably certain that cavitation will be avoided. For absolute certainty, however, especially where the propeller is of unusual design, a cavitation tunnel test is desirable.

The ordinary model propeller test for propeller performance cannot throw light on cavitation, because the pressure for the model propeller is not in the correct ratio to the ship propeller. Accordingly most model testing establishments have constructed special propeller testing tunnels in which model propellers operate in a closed circular channel under controlled pressure.

Relationships Between Characteristics

It is difficult to present a simple picture of the relationship between the basic propeller characteristics but the accompanying chart may be helpful. It is not ac-



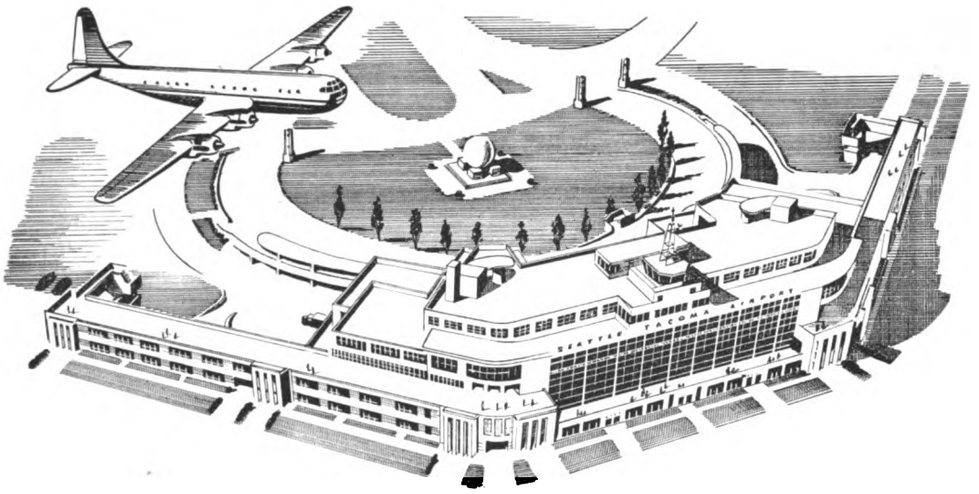
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curate enough for design purposes, but for propellers of normal design it will give a good indication of the effect of a particular change on other characteristics.

The relationship of the basic elements discussed at the beginning of the article—diameter, pitch and RPM—together with shaft horsepower are presented by plotting pitch ratio against the coefficient $A=100{,}000\times SHP/D^5N^3$. Although this coefficient is a simplified form of one which is commonly used in propeller design, this particular method of presentation is due to Sir Amos L. Ayre (North East Coast Institution of Engineers and Shipbuilders, 1944-45). The curve given is based on the average of a number of modern single screw American ships with four-bladed propellers, following the same trend as Ayre's curve. It is assumed that all propellers operate at the same slip, which is, of course, only approximately true.

As an illustration of the relationships shown by the coefficient A and the chart, suppose that a 4-bladed propeller of 18.5 ft. diameter is to absorb 6000 SHP at 96 RPM. A is calculated to be 313, and the corresponding pitch ratio on the graph is 1.03. The pitch should therefore be approximately $18.5\times1.03=19.0$ ft.

It will also be found in this case that with design SHP unchanged, the following changes are approximately equivalent, i.e. if any one of them is increased by the amount stated, one of the others must be decreased correspondingly.

Diameter ..... 6″
Pitch .....18″
RPM 4

Likewise, if SHP is increased or decreased by 800, one of the above must be increased or decreased by the stated amount.

For example, if the RPM of our hypothetical ship is to be reduced from 96 to 92, with adjustments to the machinery so that it will still develop full power at this RPM, then either diameter must be increased 6″ or pitch increased 18″. As another example, suppose that changes have been made to the machinery so that it will now develop 6800 SHP at the original 92 RPM. Then either the diameter of the propeller must be increased 6″ or the pitch 18″ to absorb the additional power.

Approximate solutions can be obtained for other similar problems. It should be remembered, however, that many simplifying assumptions have been made here. A much more thorough analysis is required to properly design a propeller for a new set of conditions. If at any time in the life of a ship any changes in conditions arise, it will be found that a new propeller designed specifically for these conditions will be well worthwhile.

Some other practical aspects of propeller design will be discussed in next month's article.

TABLE OF VALUES OF D^5 and N^3

FOR USE WITH FORMULA

D	D^5	N	N^3
16	1,049,000	65	275,000
16.5	1,223,000	70	343,000
17	1,420,000	75	422,000
17.5	1,641,000	80	512,000
18	1,890,000	82	551,000
18.5	2,167,000	84	593,000
19	2,476,000	86	636,000
19.5	2,820,000	88	681,000
20	3,200,000	90	729,000
20.5	3,621,000	92	779,000
21	4,084,000	94	831,000
21.5	4,594,000	96	885,000
22	5,154,000	98	941,000
22.5	5,767,000	100	1,000,000

HANDLING OF TANKER CARGOES

By CAPTAIN NATHAN McKENZIE*
President
Tanker Loaders Corporation

Just prior to and during the last World War we embarked on a vast shipbuilding program and as a result many fine ships were built enjoying many improvements over their predecessors. The improvements most noticeable were in hull design, engineering design, and some additions and improvements to the navigational equipment. Some improvement has been realized in the design of the equipment used in handling the cargoes. However this is almost entirely confined to the pumprooms which has resulted in a quicker discharging of the ships' cargoes.

We continue to have spills and contaminations, both of which can be very costly. Contaminations many times are due to leaks in bulkheads or for other reasons beyond the control and responsibility of the men employed in the handling of the cargo and at other times they are due to negligence. Spills are due almost entirely to negligence on the part of the men. Not only are spills costly but also hazardous, and when such occurs the ship is immediately placed in grave danger.

Liquid Level Control

The possibilities of cargo spillage could be substantially reduced if tankers enjoyed some of the mechanical improvements installed in the refineries where quantities of combustible liquids are handled. One means to this end would be the installation of a liquid level control or liquid level recognition system. There are instruments and mechanical devices on the market today which are, or could be, made adaptable to the needs of every tanker. There are liquid level control devices that register visually or audibly, or both, when the liquid of any tank reaches a predetermined level.

The installation of such a system onboard a tanker would more than pay for itself during the life of the ship. If such equipment were to prevent one costly spill it is possible that a large portion of the installation cost would be realized.

A system of this type should be so arranged that the liquid level in every tanker is recorded on a central panel placed in a strategic position in the ship. This would probably be in the amidship shelter deck space. The warning mechanism of this central control board could be a series of lights, yellow, green, and red, which would indicate to the officer in charge of the loading that any one or any group of tanks will bear watching or are about ready to top off. Each individual tank should be equipped with a level-recording device which also registers the level of the cargo in the tank visually and audibly. The men engaged in the handling of the cargo would be placed on the alert and the human error factors reduced to a minimum.

The advantages of a liquid level recording system installed as outlined are obvious. It is most certainly one method of reducing the hazards of handling combustible liquids and has been used successfully at some refineries. The cost of keeping this equipment in good working condition is small compared to its value and usefulness.

Extension Pump Control Box

The present method of having the deck personnel shut off the pumps when a certain commodity is completely loaded could be improved. The present practice of calling or shouting to the dock is not entirely satisfactory because a misunderstanding or shouting at a distance to the man on the dock to shut down the pumps can be disastrous. An extension control box could be placed on the ship with adequate identifying marks and the men actually handling the cargo would control the starting and stopping of the pumps that deliver the cargo to the ship. In an emergency, when it is necessary to stop

(Continued on Page 46)

*Paper presented before the Southern California Section of The Society of Naval Architects and Marine Engineers.

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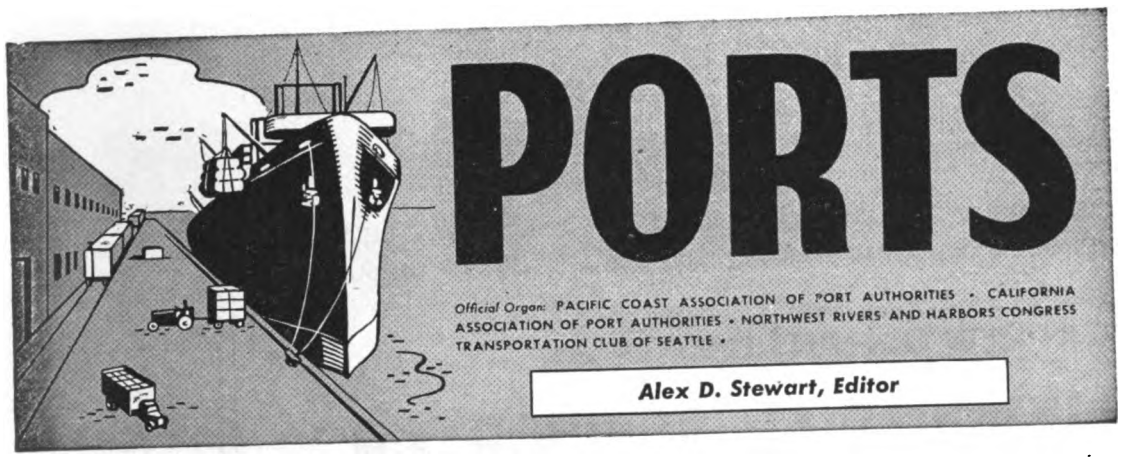
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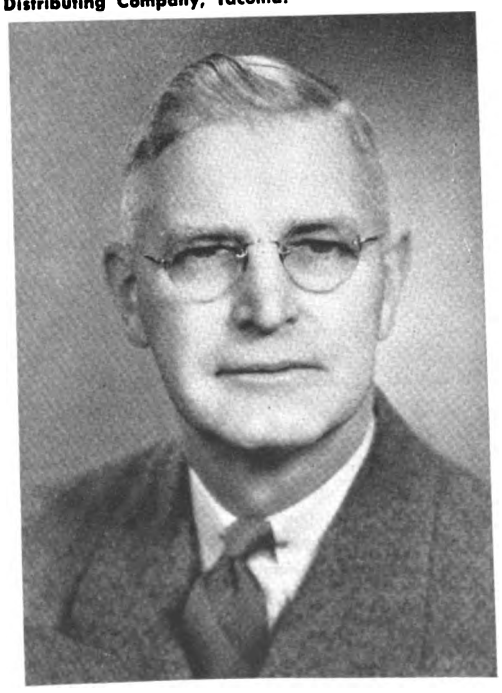
Stockings of Tacoma Purchase Seattle Firm

Sam B. Stocking, president, Shaffer Terminals, Inc., Tacoma, has announced the purchase of the capital stock of A. B. C. Transfer and Storage Company, Seattle, for operation in conjunction with Pacific Storage and Distributing Company, Tacoma. Stocking has been president and managed the latter concern since 1946, and has been identified with waterfront interests in Seattle and Tacoma since 1907. Associated with Shaffer Terminals, Inc., since 1921 he was employed by Pacific Steamship Company, principally at Seattle, earlier in his career.

Sam B. Stocking, Jr., vice-president and general manager of Pacific Storage and Distributing Company, will have personal charge of the long established Seattle firm, with no change contemplated in the general staff. A native of Seattle, Sam Stocking, Jr., attended Stadium High School, Tacoma, and went on to complete his education as a graduate of Williams College and Harvard Business School, where he remained as a member of the Research staff, to later engage in business, and then accept a position in charge of Business Administration at the University of Toronto. He was commissioned in the Naval Reserve and served with the military forces until 1945, returned to the University of Toronto, and in July, 1947, joined the Pacific Storage and Distributing Company. He is editor and co-author of a book, "Management in Marketing," published in 1947 by the University of Toronto Press.

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SAM B. STOCKING, who recently purchased the A.B.C. Transfer and Storage Company, Seattle, for operation in conjunction with Pacific Storage and Distributing Company, Tacoma.



San Diego to be Host for California Port Authorities

Claire V. Goodwin, president of the Board of Port Commissioners, Oakland, and president of the California Association of Port Authorities, announced that the annual meeting of the California Association of Port Authorities will be held at the Hotel El Cortez, San Diego, on Thursday and Friday, August 11 and 12.

Officers of the Association besides Goodwin are C. S. Sampson, president, Board of Harbor Commissioners, Los Angeles, vice president; Fred D. Parr, president, Parr-Richmond Terminal Co., treasurer; and Lloyd B. Hughes, Port of Oakland, secretary.

The members of the Association include the Port of Stockton, Port of Oakland and Howard Terminal Oakland, Encinal Terminals of Alameda, Parr-Richmond Terminal Co. and Board of State Harbor Commissioners, San Francisco, Port of Los Angeles, Port of Long Beach, Port of San Diego and Outer Harbor Dock & Wharf Co., San Pedro.

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Foreign Trade Zone No. 4 Is Opened at Los Angeles

Los Angeles has formally opened its new Foreign Trade Zone Pier No. 1, located at the entrance to the main channel of the port.

C. S. Sampson, president of the Los Angeles Board of Harbor Commissioners, said the ground area of the Zone will be 5.24 acres in the first three years with a water area of 1.17 acres to be increased by the fourth year to a total of 8.62 acres.

"It is expected the average shipment in the Zone will be 20 tons," President Sampson predicted, "and a total of 482,-220 tons of cargo will pass through the area in from three to five years." His forecast is based on a survey made among importers, exporters, steamship operators, warehousemen, customs brokers and trade associations.

The Los Angeles Foreign Trade Zone is No. 4 in the United States. New York has No. 1, New Orleans No. 2 and San Francisco No. 3.

McGarity Heads Northwest Terminal Association

At the annual meeting of the Northwest Marine Terminal Association held in Centralia in June Captain D. J. McGarity, general manager, Commission of Public Docks, Portland, was elected president. He succeeds R. L. Albin, Ames Terminal, Seattle. Other officers elected are Colonel Warren D. Lamport, general manager, Port of Seattle, vice-president, and M. M. Stewart, executive assistant to the president, Olympic Steamship Company, treasurer. Ed Stone, Seattle, was reappointed as executive secretary.

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Tacoma Terminal Man Heads Trade Association

K. M. Kennell, vice-president, Shaffer Terminals, Inc., Tacoma, Washington, was elected president of the Pacific Northwest Trade Association at the annual election held at Bellingham, Washington. Membership in the association includes business leaders of British Columbia, Washington, Oregon and Montana.

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Handling Tanker Cargoes

(Continued from Page 44)

the pumps quickly, many valuable seconds are lost by shouting to the dock personnel. This could be eliminated by the placing of a control switch on the ship.

Present regulations require all doors opening onto the main deck be kept closed during the loading or discharging of cargoes. As long as personnel are permitted to remain on the ship while cargoes are being handled it is almost impossible to keep the doors closed. The doors are usually of heavy construction and when used it is seldom that they are properly dogged down. If these doors were fitted with a quick closing mechanism similar to those used in the Navy the doors would probably be kept closed. The personnel engaged in loading a cargo does not have time to keep running back and forth closing these doors and it is important that living spaces be kept free of vapors.

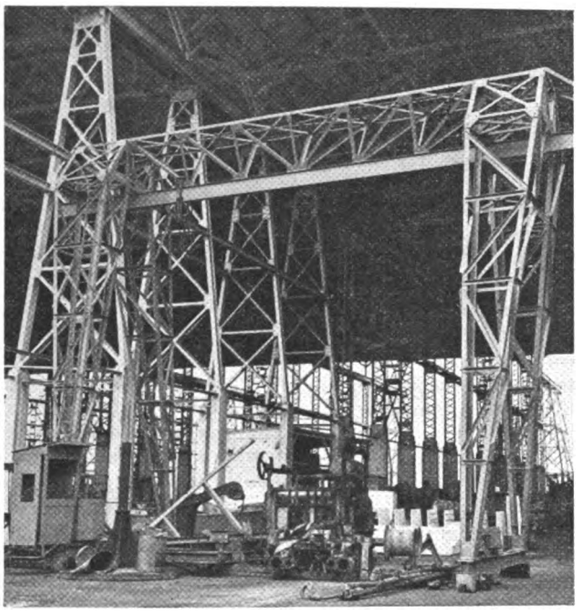
(Continued on Page 58)



LOUISIANA PORTS SURVEY COMMISSION visits the Port of Oakland . . . left to right, CLAIRE V. GOODWIN, President of the Oakland Board of Port Commissioners welcoming FRANCIS WILLIAMS, Chairman of the Louisiana Commission.

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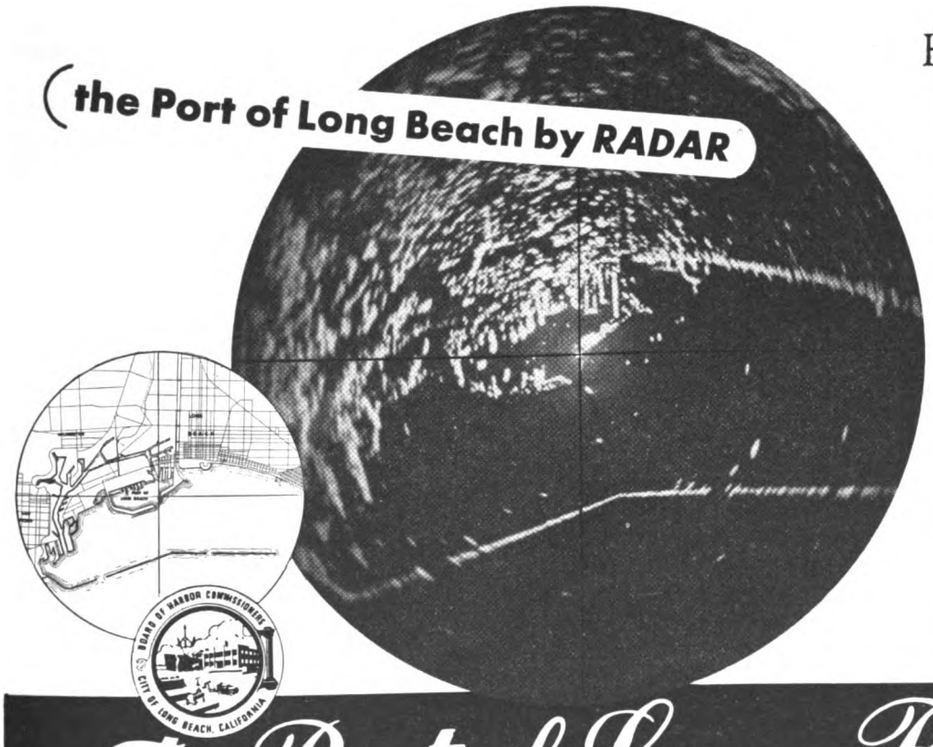
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Operation & Maintenance of Steam Turbines and Gears

(Continued from Page 31)

represents a controllable factor, at least so, as soon as it appears. The effect of vibration on steam rate, of course, is as it wipes packings and increases packing clearances. (Obviously and most importantly so for mechanical reasons, if sudden excessive vibration occurs the turbine should be slowed down to where the vibration ceases or if possible be stopped to determine the cause.)

In this classification we would also place vibration occurring on the starting of a unit which has been hot and which has been allowed to set without turning over on jacking gear or by hand. This vibration is always due to warping of the shaft caused by temperature differential expansion of the top and bottom of the shaft. Turning over at slow speed will even out temperatures and straighten the shaft whence it may be brought to speed.

The effect of packing clearances on steam rate and thus vibration on opening clearances is given further on.

All of the above factors of operation are those over which the operator has some immedate control, and by relating them to general thermodynamic design factors it is hoped a better understanding and realization of their potentialities results.

Indirect Turbine Operating Factors Affecting Steam Rate

In the second category were listed matters of operation which affected turbine steam rate either after prolonged occurrence or over which the operator did not have immediate control. We would discuss these also with regard to general design factors.

Bucket or blade clearances from a steam design point of view should be as small as possible. Practically speaking, however, because of differential expansion between rotor and casing mechanical design sets the minimum bucket or blade clearances. On marine sets of impulse design with fixed thrust bearing location minimum axial clearances are given with a recommended maximum of approximately .010" greater than the minimum values. For good operation clearances should be restored to the manufacturers' recommendations if they should be found to be otherwise. On one typical marine propulsion set of impulse design the value of proper clearance is illustrated by the fact that for a .010" additional increase in axial clearance of HP and LP turbine a loss of about .35% in output or steam rate occurs.

Packing Clearance

Packing clearances are important to good operation as regards performance and are basically determined in much the same manner as are wheel clearances, i.e., mechanical design dictates the absolute minimum clearance and thermodynamic design the recommended maximum clearance. The value of minimum packing clearance is shown by the fact that on a typical high pressure turbine of a 6000 HP cross compound marine propulsion unit an increase of .010" radial clearance of internal packing results in a loss of about 30 HP or ½% in overall steam-rate and an increase of .010" radial clearance of end packings results in a loss of about 40 HP or 2/3% in overall steam rate. A similar loss of approximately 10 HP or .2% and 20 HP or .3% in overall steam rate respectively occurs for the low pressure turbine.

Clean steam, i.e. clean of carryover of boiler water compounds and salt, results in clean steam passages with the keeping of design steam path part flow capacity and design available to velocity and mechanical energy conversion. The fouling of nozzle and bucket sections results in change of wall smoothness and possibly form and contour of the steam path. If actual plugging of areas occurs then stage pressures are changed and thus stage available energies, all of which causes a loss of stage efficiency.

Moisture Separation

Moisture separation or removal of water particles formed when expansion of steam beyond the saturation line occurs, affects the performance of the later stages of the condensing turbine. For one thing the water particles after they are formed cannot be accelerated up to the velocity of the nozzle steam jet, and thus impinges on the backs of the buckets and too when they do go through the bucket it is probably at less velocity than the steam and both these conditions cause output loss. In addition, water particles will cause erosion of the nozzle and bucket sections thus affecting the form and smoothness of the steam paths. For these reasons main propulsion condensing turbines have moisture separation chambers where the water particles thrown off the bucket are caught and contained and then drained off through suitable orifices.

From an operation point of view a maintaining of the designed inlet steam superheat is important in order to prevent excessive moisture being formed in the last stages. Generally speaking in a typical marine propulsion set some of the moisture existing in each stage may be removed and by its removal as much as .5% of overall performance or steam rate improvement can occur.

Indirect Causes of Poor Performance

Leaking inlet, extraction, and steam seal supply valves have been indirectly the cause of poor turbine performance in many instances. Their effect has been to leave a shutdown turbine in a moisture laden condition which is ideal for rusting of internal parts. Internal casing steam joints, shaft packing journals, and wheel and diaphragm surfaces have been subject to needless and damaging corrosion by leakage steam. Even buckets and nozzles of a resistant-to-corrosion material have been corroded. Particularly has this been true if previously some salt deposits have been lodged on the metal surfaces. Good operation should always call for tight inlet, extraction, and steam seal valves to prevent corrosion of steam path parts internally in the turbine when it is shut down.

Proper drainage after shutdown of a turbine is generally stressed in the operating procedures of the instruction books. It is mentioned here only a reminder of the results that may occur if it be neglected. The damaging effect is again corrosion of internal steam path parts with resultant loss of performance. One other effect has been the corrosion of wheels on the bottom section on units which were shut down for some time with the result that their rotors were actually thrown out of balance and could not be operated until cleaned and rebalanced.

Sustained vibration, or vibration which has gradually increased over a period of time to an abnormal amount, or which has suddenly occurred after which operation has been allowed to continue, will badly wear packings and increase clearances to where performance is affected. The actual effect on performance of packing clearances has been discussed previously. Good operation should never allow sustained vibration of a turbine.

This second group of operation factors affecting steam rate performance is characterized by the fact that their end results are either due to prolonged occurrence or to not immediate recognition and control by the operator.

In both categories general design factors were given for the basis of consideration for good operation and specific values of performance were shown where available in order to provide a judgment of the evaluation of the points. These latter were generally given in terms of steam rate effect or output effect.

Turbine Operation in General as it Affects Mechanical Performance

Just as there are operation factors that influence steam rate performance, so too are there those that affect mechanical performance. (Quite likely too in many instances they will be found to be similar factors.) In general mechanical factors are fairly well recognized.

From a simplified mechanical viewpoint the turbine might be considered to be made up of a high speed rotor operating in a fixed axis in close clearance to stationary parts all subject to pressure and temperature and all contained in a pressure casing. In addition there are external control mechanisms and safety devices. It will be the object of good operation then to act so as to keep the rotor clearances to the close tolerances allowable, to keep the parts and casings under pressure in a tight condition, and to keep the control and safety devices functioning freely.

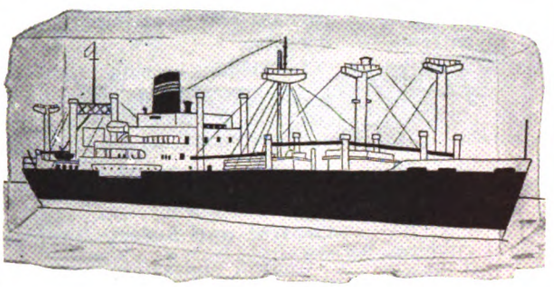
Direct Operating Factors Affecting Mechanical Performance

The rotor axis of rotation and the radial clearances are maintained by means of journals and journal bearings and the axial clearances by means of thrust runners and thrust bearings all lubricated by oil. (In addition shaft journals will

(Continued on Page 50)

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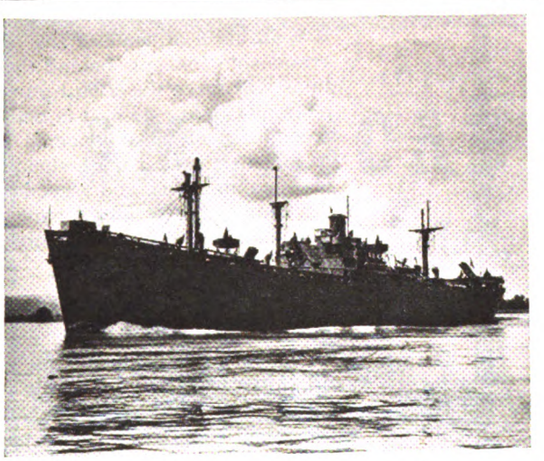


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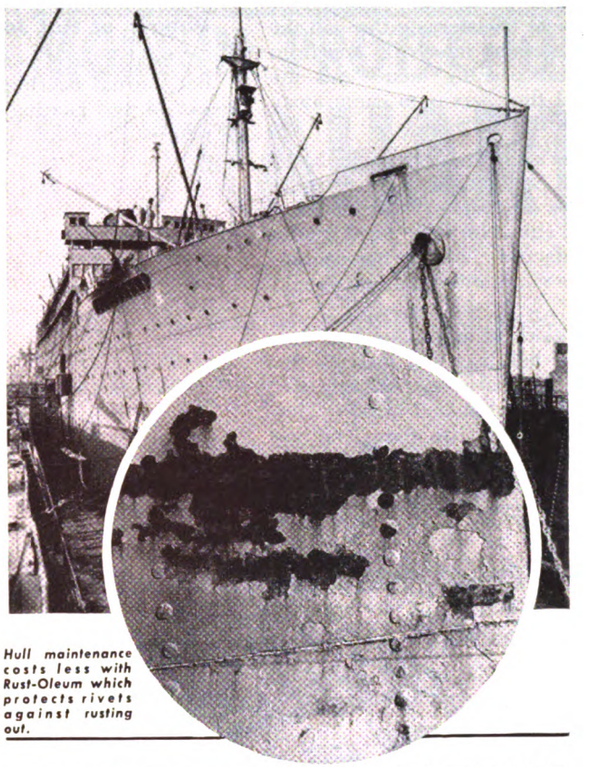
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Operation & Maintenance of Steam Turbines and Gears

(Continued from Page 48)

be hot from heat transferring through the shaft from the casing internally and from the steam seal packing boxes and the lubricating oil thus serves to carry away this heat from the bearings.)

The operator's part in maintaining bearings, journals, and thrust runner is to provide always an ample supply of clean oil having the characteristics given by the turbine manufacturer, and to not operate with excessive vibration of the unit should it occur.

A regular watch of the oil temperature rise across the bearings will indicate the performance of the bearings and any externally unaccountable and marked increase of temperature rise should be occasion for immediately reducing speed, and if possible stopping and examining of the bearing; if this is not immediately possible then examination should be made at the very first opportunity.

Danger of Hot Journal Bearings

The danger of continued operation with hot journal bearings is complete burning out of the bearing with resultant dropping of the rotor onto the packings and destruction of this latter. In addition the rotor journals and packing shaft surfaces may be severely scored and in extreme cases even bucket bands may rub. Generally, a secondary warning to the primary temperature rise warning of bearing failure will be vibration and a rubbing noise. When this occurs the unit must be stopped and the bearings checked.

The failure of a thrust bearing allows the rotor to move axially until rubbing occurs on the steel parts of the thrust bearing and then beyond that on the bucket bands or packing projections if of high low tooth type. Vibration and noise is again a secondary warning to the oil temperature rise primary warning of the bearing failure.

Excessive vibration will cause journal bearing failure due to pounding out of the babbitt under the repeated stress of the vibrating shaft.

Mechanically speaking care of bearings is next to maintenance of safety devices perhaps the most important duty of the operator.

In keeping casings tight the part of good operation is to warm up units slowly so uniform expansion of casing parts will occur. If leaks do develop they should be repaired at the first opportunity to prevent steam cutting of joints.

Control and Safety Devices

Control and safety devices as governing valves and trip valves on the steam side are of the packed stem or of the close clearance bushing stem type. Clean steam is essential to their proper operation free of sticking, but in any case good operation requires that they be examined and checked at regular intervals and that they always be kept in a working condition. Low lubrication oil pressure trips are provided on main units and should always be kept in operating condition and checked at frequent intervals. Overspeed governors are provided on all units and should be checked at regular intervals to insure their absolute operation.

In the final analysis good operation of the turbine both thermodynamically and mechanically means adherence to the instructions provided by the manufacturer. A realization of some of the turbine general design concepts behind these instructions will serve the useful purpose of emphasizing them. Also, it is believed that a recognition of these concepts will further result in a better understanding of turbine maintenance, and especially preventative or planned maintenance, which is essential to continuous trouble-free performance.

General Operating Factors of Marine Reduction Gear

From an operation point of view the providing of an ample supply of clean oil to the gear mesh and bearings is the most important objective in gear performance. Pressure gages indicate oil supply to the gears. Sight flow indicators are provided to show flow of oil from the bearings. Thermometers for measuring supply oil temperature and oil temperature out of the bearings are also provided.

Bearings hold the pinions and gears in alignment with respect to each other. Obviously fore and after bearings of any individual pinion or gear must be maintained to constant crown thicknesses at the reaction points. If either bearing goes down more than the other then misalignment will occur with partial tooth contact taking place, resulting in probable overloading of the tooth surfaces.

Good operation calls for the periodic examination of the tooth surfaces for signs of misalignment and resultant overload-

(Continued on Page 52)

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Operation & Maintenance of Steam Turbines and Gears

(Continued from Page 50)

ing. Localized pitting of the contact surface will generally show up such a condition.

Overloading the Gear

In the modern turbine gear propulsion unit it is quite possible to directly overload the gear to a detrimental amount. As discussed under turbine control valves, there is an excess of nozzle area in the turbine inlet to provide for operation at reduced inlet steam pressures. If extra hand control valves are opened and inlet pressure is maintained, outputs considerably in excess of the normal rated or even maximum rated are obtainable. In fact for most installations the maximum output that can be obtained will probably be limited by the boiler's capacity to supply steam to the turbine rather than by the available turbine nozzle areas inability to pass steam.

Any operation at excess output will overload the gears, and if continued may cause wear and damage to the gear teeth.

Overloading of gears by operation of the turbine above rated power is, moreover, only part of the story for the gear teeth transmit the power output of the turbine by means of a sustained torque, and it is the torque that determines the actual tooth loading and not the power alone. In other words, applying the power equation Power=K x Torque x RPM or Torque=K×(Power/RPM) and the tooth loading is proportional directly to power and inversely to RPM.

Now it is a well known fact that for fixed input power to the propeller shaft of a vessel the designed RPM of the propeller will be decreased if the propeller pitch is too great or if the vessel is slowed down by increased resistance to motion due to any of a number of causes such as deep draft, fouled hull, head winds and seas, or any combination of these. On one type of vessel on which draft tests were made, the RPM drop with constant power was about 10% in going from the light draft condition to the heavy draft condition. Couple this with the additional drag due to bottom fouling and head winds and seas and it will be apparent that very appreciable drops in propeller RPM may occur.

Effect of R.P.M. Drop

Any drop in RPM not accompanied by a proportionate drop in power results in a proportionate increase in torque. It will be remembered in discussing the effect of RPM change on turbine performance that the turbine output was affected relatively only a small amount for nominal RPM changes. Thus even with normal power valve opening it is quite possible to overload a propulsion gear if the RPM is down appreciably.

As an example, consider the unit of figure 1 rated at 6000 HP and 92 RPM. If operation was on the 12 nozzle hand valve combination, the output at normal 92-95 RPM and rated steam conditions would be 6200 HP. If RPM of say 85 should result then the power would be 6100 HP and the torque or gear tooth loading increase would be 6100/6200x 92/85=1.065 or 6.5% increase.

Another way of expressing it is that the torque factor, power/RPM, would be 6100/85=71.8 HP/RPM as compared to the normal rated of 6000/92=65.3 HP/RPM or (71.8/65.3—1) × 100% = 10% increase and as compared to the maximum rated of 6600 = 69.5 HP/RPM or (71.8/69.5—1)× $\frac{95}{100}$%=3.2% increase of torque or tooth loading.

If now RPM were arbitrarily increased the power required would also increase, not in proportion but appreciably more so with even further overloading of the gear then taking place. Thus, the fallacy of operating a geared vessel on an RPM basis. RPM is not synonymous with power, although many operators have apparently disregarded this fact and as a result have overloaded propulsion gears, with wear then taking place.

Good operation of propulsion gears then requires that consideration be made of not only power output but also the RPM which occurs. The criterion of power operation should be the gear torque factor of power/RPM and continued operation above the maximum rating torque factor should not be done, bearing in mind too, that if operation at powers above rated is done an additional increment of loading on the low pressure side due to uneven load variation between the high pressure and low pressure turbine may also occur.

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Part 2 of this article will be printed in The LOG in August.



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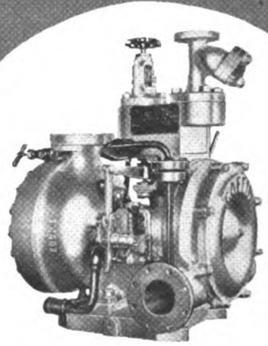
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EQUIPMENTALK

May and Smith, Seattle, Announce New Distributors

John Smith, partner, May and Smith, Seattle, has announced the appointment of P. Thompson Tool and Supply Company, New Orleans, as exclusive distributor for the May and Smith Company turbine carbon seal rings; and also the appointment of T. H. McLean, formerly with H R L Machine Works, as sales manager, with headquarters at Seattle.

May and Smith Company distributors on the Pacific Coast are W. H. Robbins at Portland; the C. H. E. Williams Company, Ltd., at Vancouver, British Columbia; Joseph F. Gisler Company at San Francisco; and Wilmington Engineering Service Company at Wilmington, California.

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John W. Belanger Promoted By General Electric

John W. Belanger, manager of the General Electric Company's turbine divisions and well-known in the marine industries on both coasts, has been promoted to the post of assistant general manager of the company's apparatus department, which is G-E's oldest and largest operating department.

Glenn B. Warren, manager of engineering of the turbine divisions, succeeds Mr. Belanger as manager.

Nicholas M. Du Chemin, manager of the G-E meter and instrument division, has also been named as an assistant manager of the apparatus department.

JOHN W. BELANGER, newly-appointed Assistant General Manager of General Electric Company's Apparatus Department.



Many Foreign Sales of Radiomarine Radar

Within the past few months 160 Radiomarine radar systems, have been installed on passenger and cargo vessels of various countries through the facilities of the RCA International Division.

"These installations testify to the increasing value of radar in insuring the safety of ships' cargoes and crews," stated Meade Brunet, vice president of RCA and managing director of the RCA International Division. "Radar contributes to increased speed in ocean voyages," Mr. Brunet continued. "It has been demonstrated that a radar equipped vessel can increase its ocean crossings by at least two voyages a year."

The sale, installation and servicing of Radiomarine radar and communication equipment is handled by a network of service depots in the principal seaports of the world. These depots are located in over fifty ports of the world, in addition to twenty-three maintained in the United States by the Radiomarine Corporation. In the Far East, marine sales and service facilities are available through the RCA Victor Company of China, and in South America through RCA Victor Argentine, S. A. Service in Europe is provided by RCA distributors: N. T. M. "Radio Holland" N. V., in Amsterdam; Aksjeselskapet Nera in Oslo; S. A. I. T., in Brussels; Aktiebolaget Pegasus, in Stockholm; Charilaos Petropoulos in Athens; Dansk Radio in Copenhagen and Compagnie Radio Maritime in Paris.

A world-wide marine radio and radar service plan has been set up by which RCA associated companies and authorized distributors in the principal seaports of the world are establishing the necessary service and maintenance facilities through their individual organizations.

The plan applies to all products of the Radiomarine Corporation including, telegraph and telephone for ocean-going liners; ship-to-shore radiotelephone, direction finders, radar, auto alarms, life boat equipment, and many other pieces of electronic apparatus required by the safety of life at sea regulations. Under the plan each RCA marine service depot is staffed by trained technicians who are schooled in all phases of maintenance, repair and installation work for marine radio and radar apparatus. The facilities of the Radiomarine Corporation in New York, have been made available for this training without charge.

Recently a record installation of radio equipment was made aboard the Turkish ship ss BAKIR by the Radiomarine Corporation. A crew of five servicemen removed all the old obsolete equipment and installed the new in 24-hours' time.

Dearborn Chemical Assigns Wash.-Oregon Territory to Bus

Dearborn Chemical Company, Chicago, manufacturers of water treatment chemicals and NO-OX-ID rust preventives, has announced the addition of Edward S. Bus to their sales staff.

Bus will take over the Washington-Oregon territory now covered by Colin Fryer who is being transferred to Dearborn's Honolulu office. Mr. Bus, who is a native of Seattle, has had many years of experience in the engineering field. He attended the U. S. Maritime School in Alameda, California, and served for nine years as a chief engineer in the Maritime Service. He has also had previous experience as a sales representative in the industrial field. Mr. Bus will make his headquarters in Seattle.

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Combustion Announces New Sales Appointments

D. S. Walker, vice president in charge of sales, Combustion Engineering—Superheater, Inc., 200 Madison Avenue, New York, announces the following appointments in the company's Sales Department:

Walter Springe, for many years district manager, Kansas City, has been made division manager, with headquarters in Kansas City, Missouri.

C. J. Grossi has been made district manager, Tulsa, Oklahoma.

T. E. McMahon has been transferred from the Philadelphia District Office to the Kansas City Office as district manager.

W. J. Woodruff becomes district manager of the St. Louis, Missouri, Office.

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Selby, Battersby Elects New Officers

At the annual meetings of stockholders and directors for both Selby, Battersby & Company, and Selby Sales Company, held in their Philadelphia offices on May 11th, G. W. Selby, president and general manager since 1925, relinquished active management of the two companies to his son, J. M. Selby who is also vice president. Selby Battersby is well-known in the marine field for its deck and bulkhead coatings.

The senior Selby will continue as president, supervising the companies' overall policies both in the home office and in the field.

Other officers elected were T. Ewing Montgomery, secretary, C. S. Cook, treasurer and chief accountant, Miss A. M. Brattain, assistant treasurer and Miss C. P. Taintor, assistant secretary. R. A. Gilbert, purchasing agent, was elected to the board of directors of both companies.

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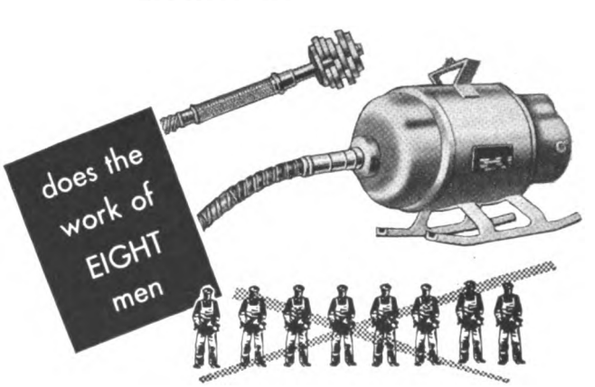
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Baldt Anchor Appoints Haviside West Coast Rep

The Baldt Anchor, Chain and Forge Division of The Boston Metals Co., Chester, Pa., announces the Haviside Co., San Francisco, as the new, exclusive sales representative and distributor for Baldt Products in California, Oregon and Washington.

The Haviside Company will carry substantial stocks of Baldt products in popular sizes to enable them to handle all inquiries and provide immediate delivery of Baldt Di-Lok forged steel stud link anchor chain, Baldt anchors, connecting links and shackles. Baldt officials claim their Di-Lok forged steel chain has been proven by laboratory tests to be the strongest anchor chain known.

Ralph W. Hewett, Haviside manager, will be in charge of the Baldt coast distribution.

American Bureau of Shipping reported 65 large oil tankers, passenger and cargo vessels under construction or under contract as of March 1, 1949, in the United States and all of these are being equipped with Baldt anchors and 80% with Baldt Di-Lok forged steel chain.

Included in this list are three large passenger-cargo liners being built by New York Shipbuilding Corp., Camden, N. J., for the American President Lines. Each of these vessels will carry two 13,370-lb. Bower anchors, one 11,340-lb. spare anchor and one 4,795-lb. stream anchor, all of the Baldt stockless type. They will also carry 22 15-fathom lengths of 2 7/16" Di-Lok chain and the stream anchor will be equipped with seven 15-fathom pieces of 1⅜" Di-Lok chain.

The larger of the super tankers under construction will use two 16,345-lb. Bower anchors, one 13,895-lb. Bower and one 5,915-lb. stream anchor, also all of the Baldt stockless type. The complement of Di-Lok forged steel stud link chain of these super tankers is 22 15-fathom lengths of 2 11/16" size.

Di-Lok chain was developed by the Navy at the Boston Navy Yard. Before World War I, practically all chain used for ships, including Navy craft, was of wrought iron. The Boston yard manufactured the chain for the Navy vessels but war requirements taxed the chain manufacturing facilities at the yard, with the result that outside interests manufactured cast steel chain by a development of the ordinary foundry practice of pouring molten metal in preformed molds. This chain supplemented wrought iron chain and was adopted by the navy, which considered it somewhat stronger.

Authorities at the Boston Navy Yard launched a program of research and development of another chain and, after many years, developed Di-Lok forged steel chain, which was adopted as standard by the Navy. The Baldt company acquired the exclusive manufacturing rights for commercial use and for an auxiliary supply source to the Navy. The chain is now forged, under the patents originating in the Boston Yard, from high tensile steel bars with the stud forged as an integral part of each link, which the manufacturers say cannot break, work loose or fall out.

"Baldt" has been for years a name synonymous with the word "anchor" and is the accepted standard for ocean-going vessels. Baldt anchors were manufactured on the Pacific Coast by Columbia Steel Co. under patent rights until that company recently discontinued manufacturing finished castings. These anchors now will be manufactured by Baldt at its Chester, Penna., plant and shipped to the west coast for use.

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Fish Oil is Used as Base of Rust-Oleum Metal Coating

Rust-Oleum, an anti-rust metal coating for shipboard use, is a partial product of the sea, itself, for its base is fish oil and it was developed under seagoing conditions by a master mariner, the late Captain Robert Fergusson, founder of the Rust-Oleum Corporation, Evanston, Illinois.

As a lad of 12, Captain Fergusson sailed from Scotland to answer the call of the sea and soon saw the great amount of damage done by rust and corrosion aboard ship. He early learned the value of crude fish oil in combatting rust and sought for years to devise means of eliminating its two main objections, the disagreeable odor and the fact it would not dry.

At the close of World War I, Captain Fergusson was in charge of reconditioning and maintaining merchant ships laid up at New Orleans and perfected his rust-combatting solution which became Rust-Oleum.

Steamship operating officials find Rust-Oleum the answer to most of their marine rust problems, both topside and below deck. It is claimed to be especially resistant to the rust-producing action of salt air, spray and water and can be applied directly to rusted surfaces, eliminating the time, expense and labor of scraping them down to the clear metal. Rust-Oleum penetrates through the rust to the metal and dries to a firm, elastic coating.

When Captain Fergusson died, he held nine Pacific Coast pilot licenses and was well known in marine circles on all seaboards. His two sons, Robert and Donald, carry on the business, still using fish oil as the base for the coating.

The Rust-Oleum Corporation is making its products available in all parts of the world. At the principal American ports the distributors are: New York, John N. Thorp Co.; Norfolk, Taylor-Parker Co., Savannah, Savannah Ship Chandlery; New Orleans, Standard Supply and Hardware Co.; Galveston, Flood & Calvert; Long Beach, Barnes & Delaney; San Francisco, T. H. Pitt Co. and Seattle. E. H. Holm Co.

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Marine Pumps, Inc. Appoints Charles E. Lowe Co.

Charles E. Lowe Co., 185 Steuart St., San Francisco, has been named representative of Marine Pumps, Inc., Wilmington, an affiliate of Diesel Control Corp., which is manufacturing pumps formerly produced by the Joshua Hendy and Pomona Pump plants.

The Lowe Company also handles the Minnesota Mining and Manufacturing Co. line of 3-M adhesives and deck seam sealers. In addition, Lowe carries U. S. Gaskets, pump spun liners and pump and turbine parts.

General manager of the Lowe company is H. B. Hotchkiss, a former Matson marine engineer who was chief trial engineer and marine superintendent for the Kaiser shipyard No. 3 at Richmond during the war. Office manager is Ivan K. Wright, who was office manager of the marine department of Kaiser Yard No. 3. In charge of the 3-M sales and service is Harry Prout, a wartime Army lieutenant colonel who went ashore on Omaha Beach on D-Day five years ago.



RALPH W. HEWETT, manager of the Haviside Company, San Francisco, who will have charge of Pacific Coast distribution of the Baldt line of anchors, anchor chain and allied products.



RUST-OLEUM VENDORS—Left to right: J. R. BOREN, Temple City, Cal., factory representative for Rust-Oleum Corporation, and THOMAS H. PITT, T. H. Pitt Co., San Francisco, northern California representative for Rust-Oleum.

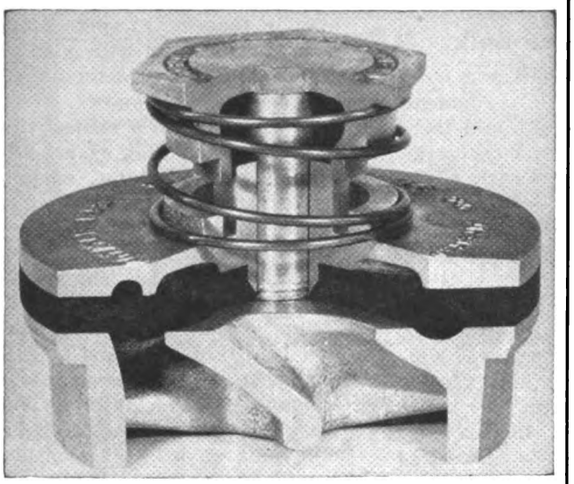


THEY HANDLE MARINE PUMPS and 3-M adhesives and deck sealers. Standing are HARRY PROUT and IVAN K. WRIGHT and seated is H. B. HOTCHKISS of the Charles E. Lowe Co., San Francisco.

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Sperry Opens New Marine School in New Orleans

Following the opening of a new marine school in New Orleans on May 27, Sperry Gyroscope welcomed students to their first radar class in that city. This training center is under the supervision of J. Edwin Boelto, Sperry's southern district manager.

For the present, and until the back-log of demand for radar instruction has been reduced, radar classes of eight to ten students will be run every Monday through Friday for several weeks. Then a class in the gyro-compass and gyro-pilot will be conducted before returning to radar. In addition, the center is equipped with the new Sperry Mark 2 loran for instruction on that navigation aid when the demand arises.

William E. Poehl, formerly of the Sperry school in New York, is instructor for both radar and the gyro-compass and gyro-pilot. In addition to the school, Sperry recently activated a new radar shop at the district office location, 549 Baronne Street.

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John Carroll Returns to American Hoist & Derrick

Stanley M. Hunter, Executive Vice President of the American Hoist & Derrick Company, St. Paul, Minnesota, announces the appointment of John E. Carroll as general sales manager of the company.

Carroll, a graduate engineer from the University of Minnesota, originally started to work for American Hoist in 1937 as a district sales representative in the Texas, then Chicago, and later West Coast territory. He resigned his sales position to become a partner in the firm of Harron, Rickard and McCone Co. of Southern California, heading the Construction Equipment Division.

Carroll brings with him, on his return to American Hoist as general sales manager, invaluable field experience.

Some Personnel Changes for General Electric

The appointment of H. J. Chase as engineer of the Steam Power Section of General Electric's Federal and Marine Engineering Division was announced recently.

Mr. Chase joined the company's marine divisions in 1940 and since has been engaged in design and application of various types of marine equipment.

He will now be responsible for application or system engineering of marine steam power combinations, including turbines and gears for propulsion and steam plants for auxiliary use.

Frank V. Smith of the Aircraft, Federal and Marine Divisions of General Electric retired from the company after 29 years of service, it was announced recently by Early K. Henley, manager of the Marine Division.

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Largest Non-Propelled Bulk Oil Carrier is Launched

Pacific Coast Engineering Co., Alameda, recently launched "Barge 12", said to be the largest non-propelled bulk oil carrier in the United States. The length of the craft is 230 feet, width 46 feet, depth 16 feet and it has a capacity of 26,150 barrels of petroleum products. Bay Cities Transportation Co., San Francisco, is the owner.

The barge is equipped with three Gray marine Diesel engines driving three Kinney cargo pumps. There are two heavy duty Hyde capstans aboard.

Ets-Hokin & Galvan, California marine electricians, designed and installed all electrical work on the barge, as well as on the Enterprise Diesel-powered tug FRANK G. WHITE, recently completed by Pacific Coast Engineering for the California State Board of Harbor Commissioners. The tug is fitted with heavy duty Exide Batteries and a C-O-Two Fire Extinguishing system furnished by Ets-Hokin & Galvan. Bethlehem designed the tug. Morris Guralnick, San Francisco, was consulting naval architect.

Handling Tanker Cargoes

(Continued from Page 46)

vapors.

Closed Ullage Plugs

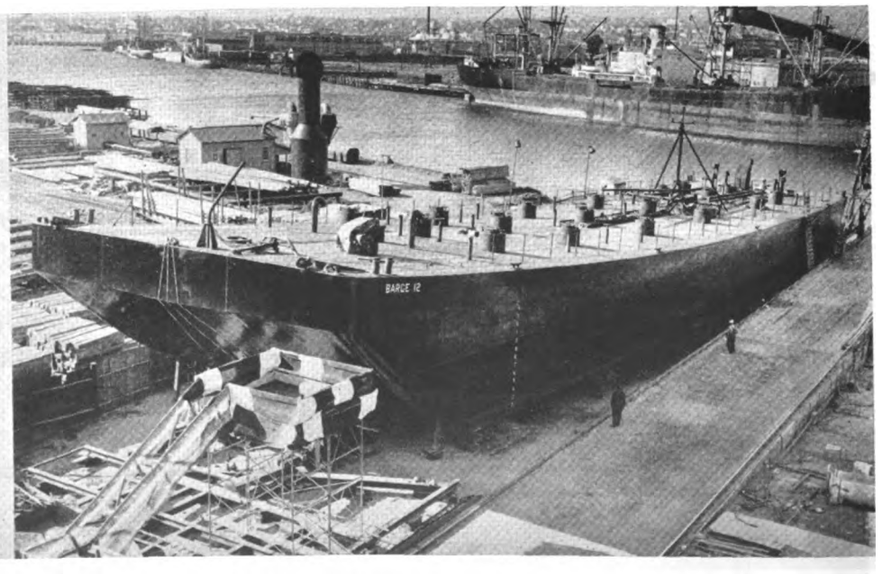
It is my opinion that cargoes should be loaded onboard a tanker with the ullage plugs closed. However, it is not practical to load in this manner on most tankers because it is necessary to look into the tanks at frequent intervals to observe the level of the cargo. The vapors should be made to pass through the venting system and dissipated at the masthead. If the tanker was equipped with a liquid level control or recognition system loading a cargo with closed ullage plugs would be simple. Under certain conditions the entire ship is shrouded in vapors as a result of loading with open ullage holes and with the unrestricted movement of personnel about the ship the possibility of disaster is enhanced by the presence of vapors about the decks. I am of the opinion that the present popular method of loading a cargo with open ullage holes is not the safest method and could be improved.

In dealing with a subject closely related to cargo handling we are all concerned with the fire fighting equipment on a tanker and there is room for improvement. The open end nozzle is practically worthless in fighting an oil fire, but they are still being used. The fog nozzle is far superior to the open end nozzle. Each tanker should carry an adequate supply of foam onboard and the equipment should be kept in excellent working condition at all times. There should be at least four asbestos suits on each tanker and hung up in a place easily accessible to all personnel. All the fire fighting equipment should be prominently displayed and easily accessible to personnel loading the cargo. A few seconds saved by trained personnel with the proper equipment may save a ship.

JOHN E. CARROLL, newly-appointed General Sales Manager of the American Hoist & Derrick Company.



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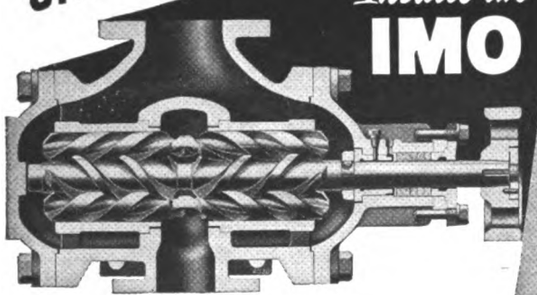
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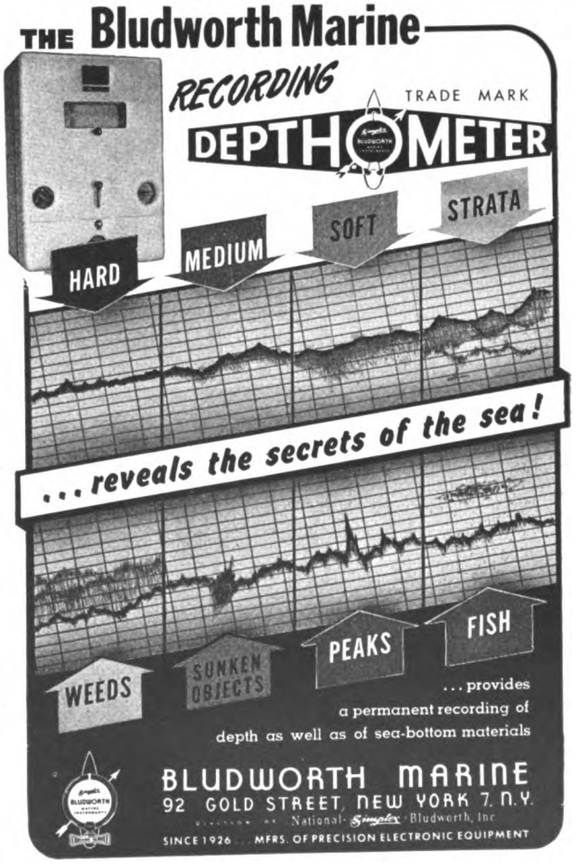
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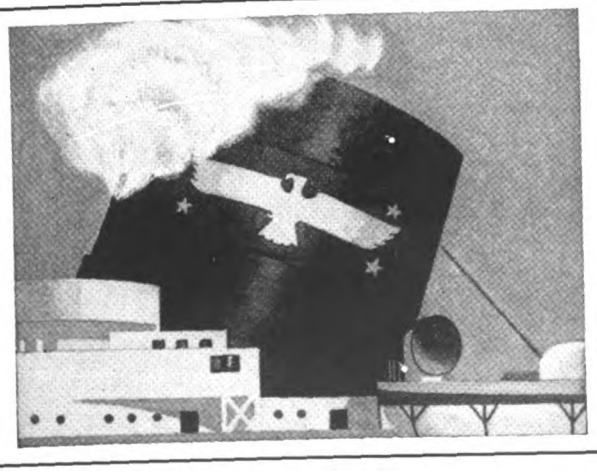
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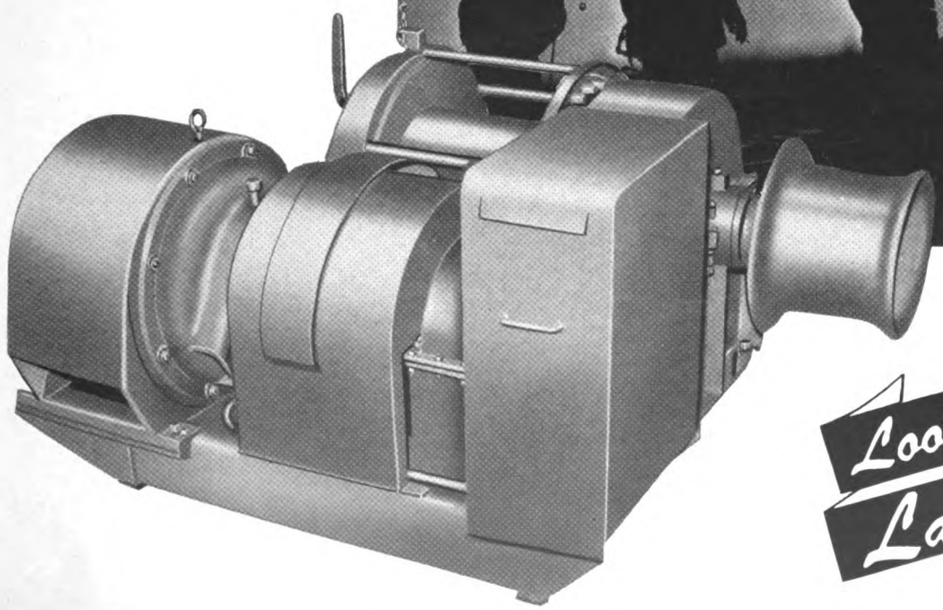
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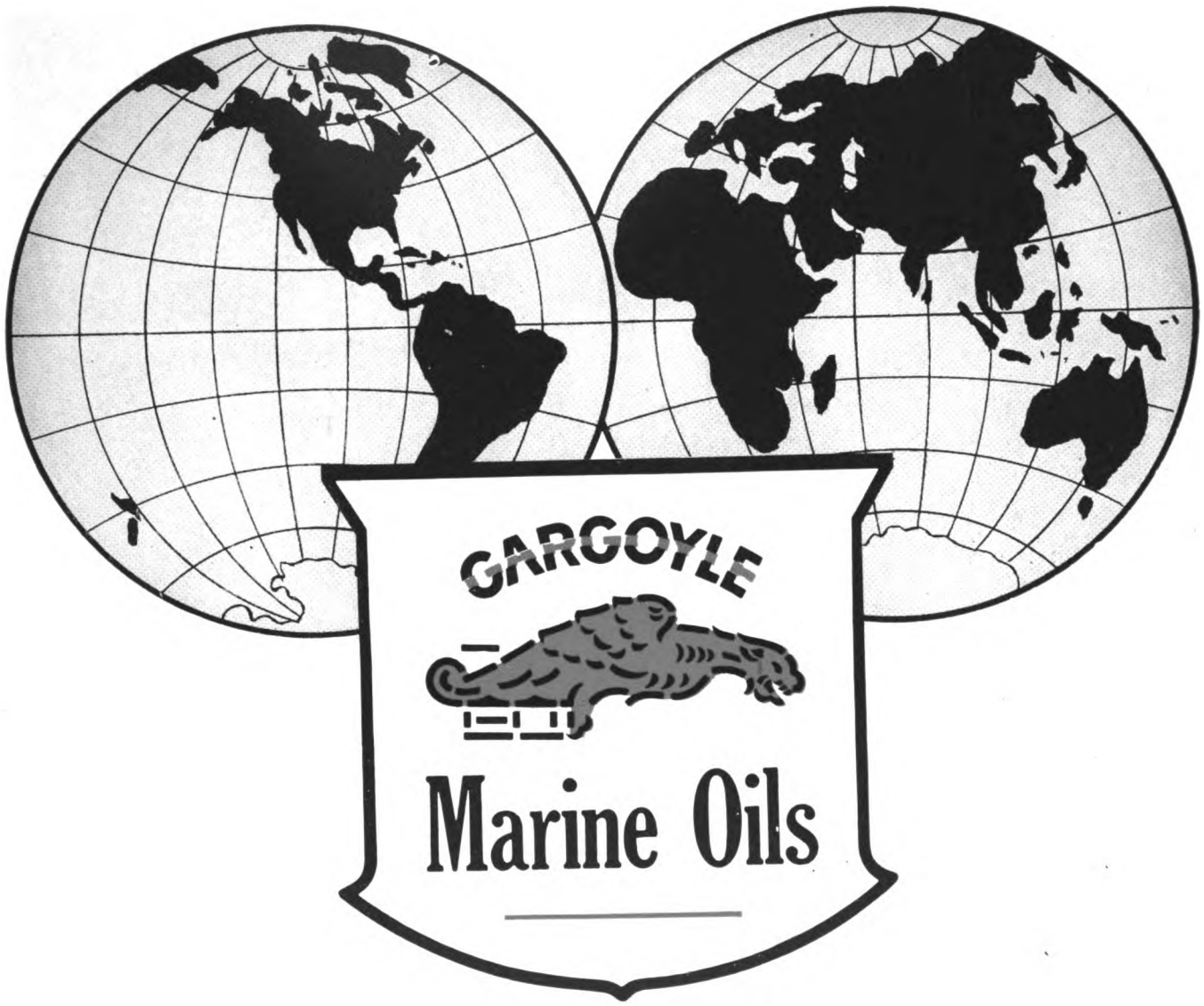
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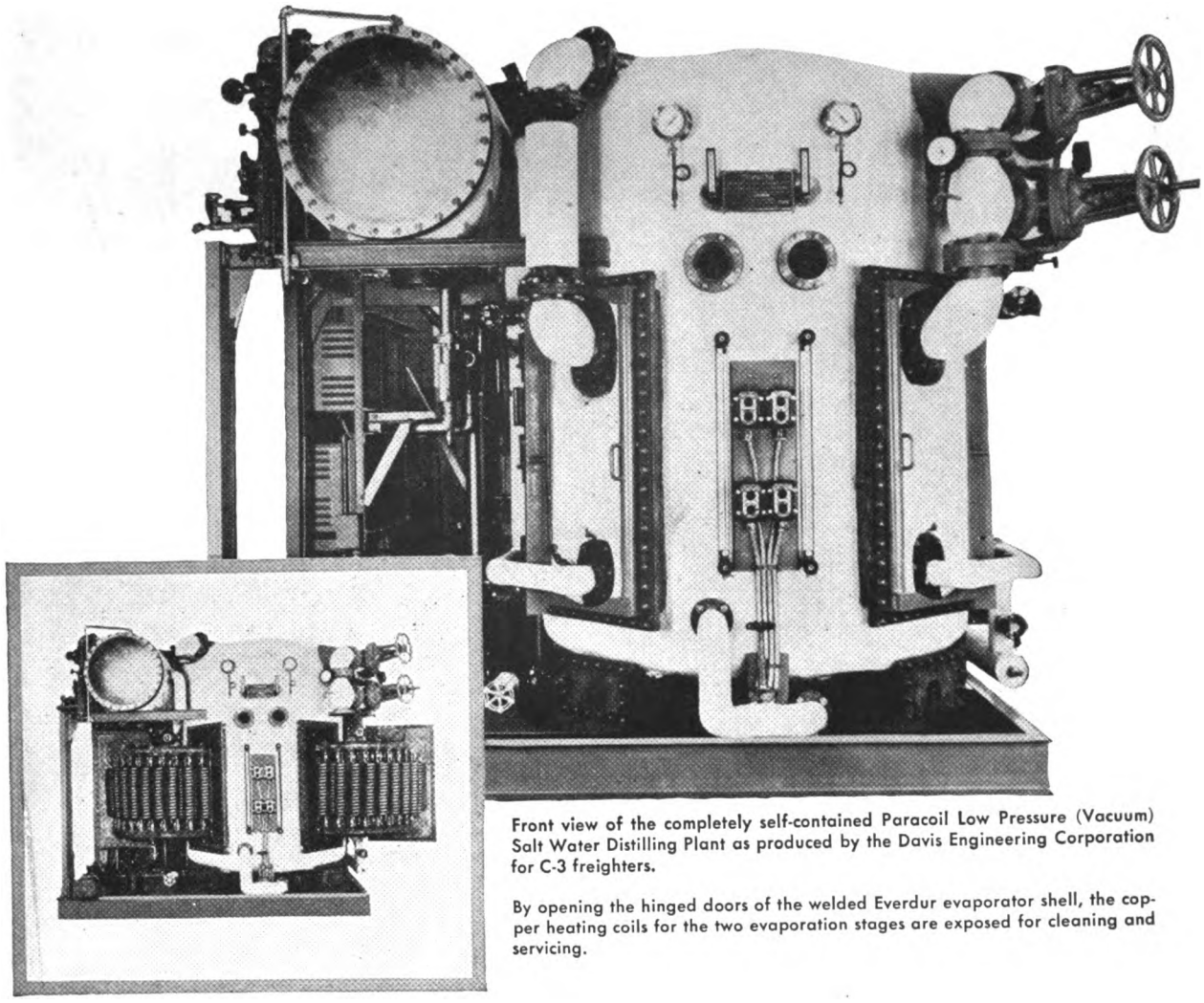
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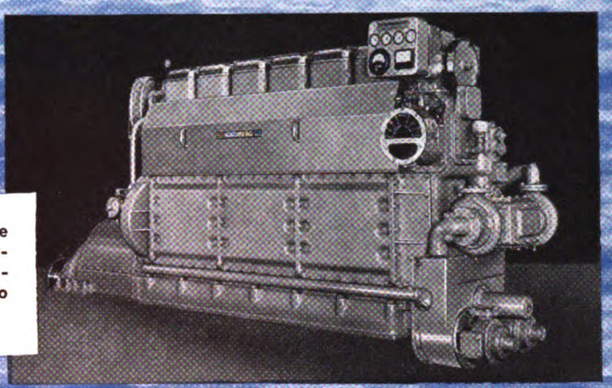
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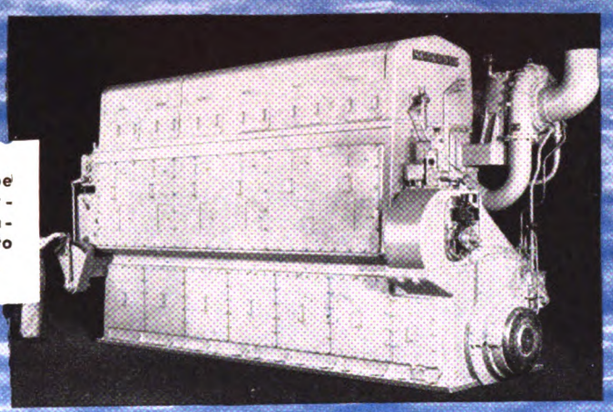
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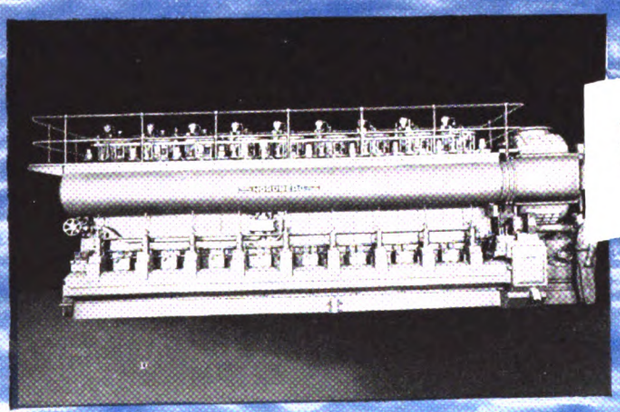
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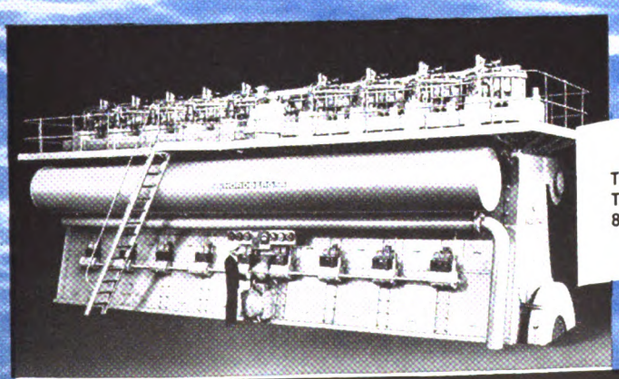
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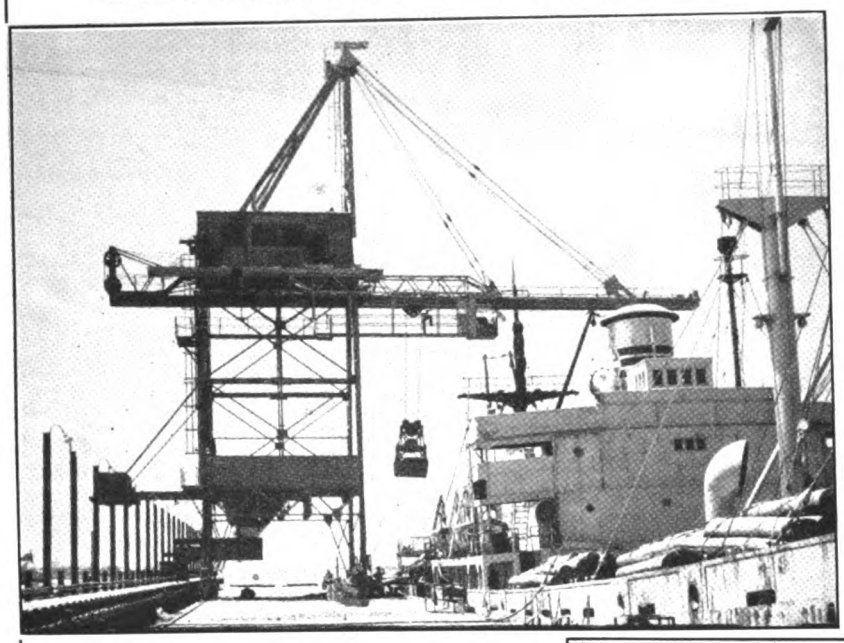
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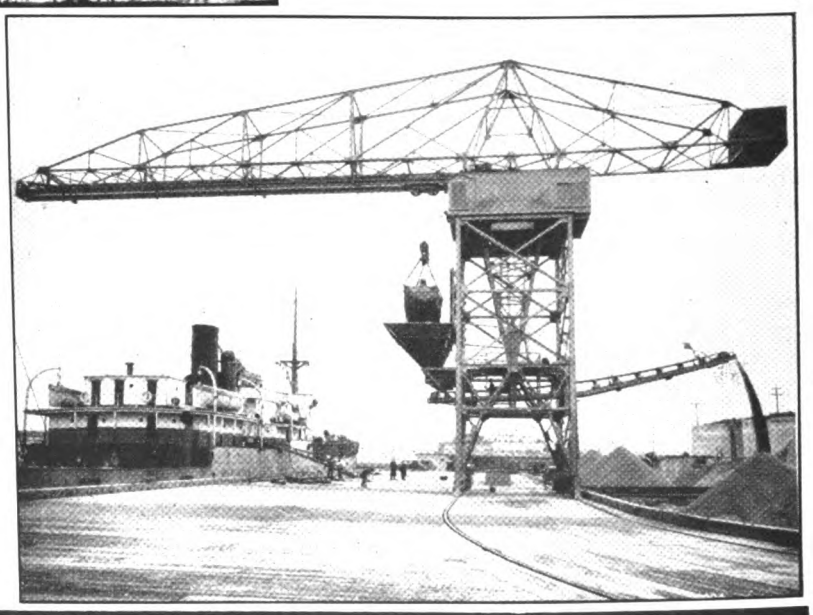


Grab-Bucket Unloader on Mississippi River

The Colby Crane shown at the left was recently installed on a large terminal on the Mississippi River and is a fast-handling grab-bucket unloader of 12 tons capacity. Two similar cranes are operating in the San Francisco Bay area. These installations handle cargo from ship or barge to hopper to conveying system—a fast, efficient and economical straight line operation.

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Photo at right shows Colby Hammerhead type grab-bucket in action at a Pacific Coast cement plant. Note that the crane travels on both straight and curved track in which a turn table is incorporated, turning the crane 90 degrees for travel to back storage. The average ship load is from 7,000 to 8,000 tons and is discharged in from twenty-two to twenty-six hours, depending upon the tide.



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HEAD OFFICES: 525 Central Building, Seattle 4, Washington

NEW YORK CITY, 15 Park Row — 417 Market St., SAN FRANCISCO 5 — In Canada, Colby Crane & Engr. Ltd., 814 Birks Building, VANCOUVER, B. C.

Affiliated Companies: Prescott Iron Works, American Foundry Co., Seattle

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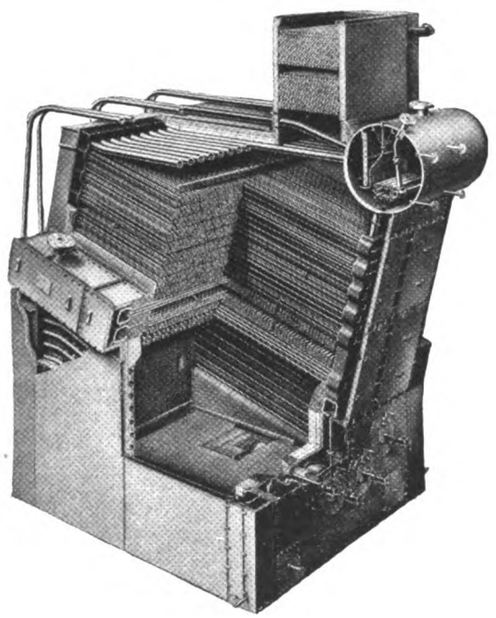
C-E STRAIGHT TUBE AND BENT TUBE BOILERS

Meet Every Marine Requirement

The two most widely preferred types of marine boilers — straight tube, sectional header and 2-drum bent tube — are furnished by Combustion Engineering-Superheater in variations to meet a wide range of capacities, pressures and temperatures.

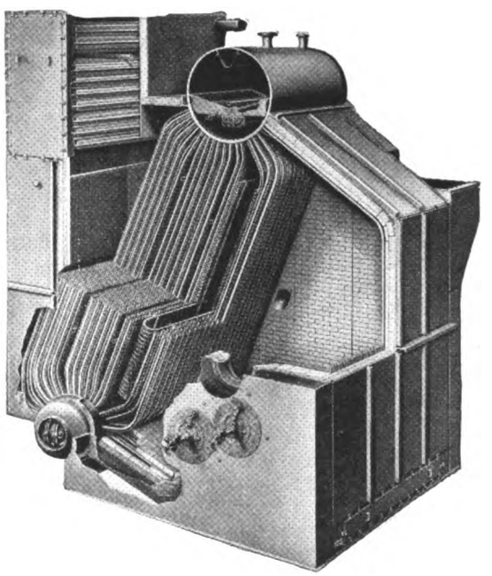
At 750 psi, or under, space limitations or type preference usually determines the selection of one or the other. For higher pressures, however, the bent tube boiler is the practical answer — aside from forced circulation designs.

But, straight tube or bent tube, natural or forced circulation, C-E offers exceptionally broad experience gained from many hundreds of marine installations of all types. If it's C-E, your choice will be the best of its type.



C-E STRAIGHT TUBE, SECTIONAL HEADER BOILER — Normal capacity 5,000 to 50,000 lb of steam per hr, or more, with pressure limited to about 750 psi.

Illustrated is the single-pass design, which assures low draft loss and avoids soot collecting shelves and pockets. The boiler shown is equipped with Elesco Interbank Superheater, submerged type Desuperheater and Economizer. The side walls of the furnace are water-cooled. The unit is steel encased and where desired may have partial or complete double air casing.



C-E BENT TUBE BOILER—Capacities available from 2,500 lb of steam per hr up to maximum requirements, with pressure range limited only by the needs of the installation.

The 2-drum design illustrated is well adapted to space and steam load conditions ordinarily encountered. Absence of baffles means low draft loss without sacrifice of heat absorption. Side walls, roof and floor of the furnace are water-cooled. Superheater, economizer and air heater may be included.

B-165-8

Combustion Engineering-Superheater, Inc.

A Merger of COMBUSTION ENGINEERING COMPANY, INC. and THE SUPERHEATER COMPANY

200 Madison Avenue, New York 16, N. Y.

PRODUCTS INCLUDE ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT FOR STATIONARY AND MARINE APPLICATIONS

Pacific Coast: P. L. Johnson Co., Monadock Bldg., San Francisco, and Petroleum Bldg., Los Angeles

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GET UNDER WAY

FASTER!

WITH THE

American

BOOM TOPPING WINCH

WHAT would it be worth to you, in cash, to save 25 minutes or more on every boom-topping operation? Add up all the factors —number of hatches, number of booms, number of crewmen—and the figure becomes tremendously important.

You *can* make that saving, with American Boom Topping Winches. Instead of spending about 30 minutes, as in manual operation, you can use the simple, compact, electric-powered American Winch to raise the boom from stowed position to working position in *2½ minutes!* Even the most inexperienced deckhand can safely handle it.

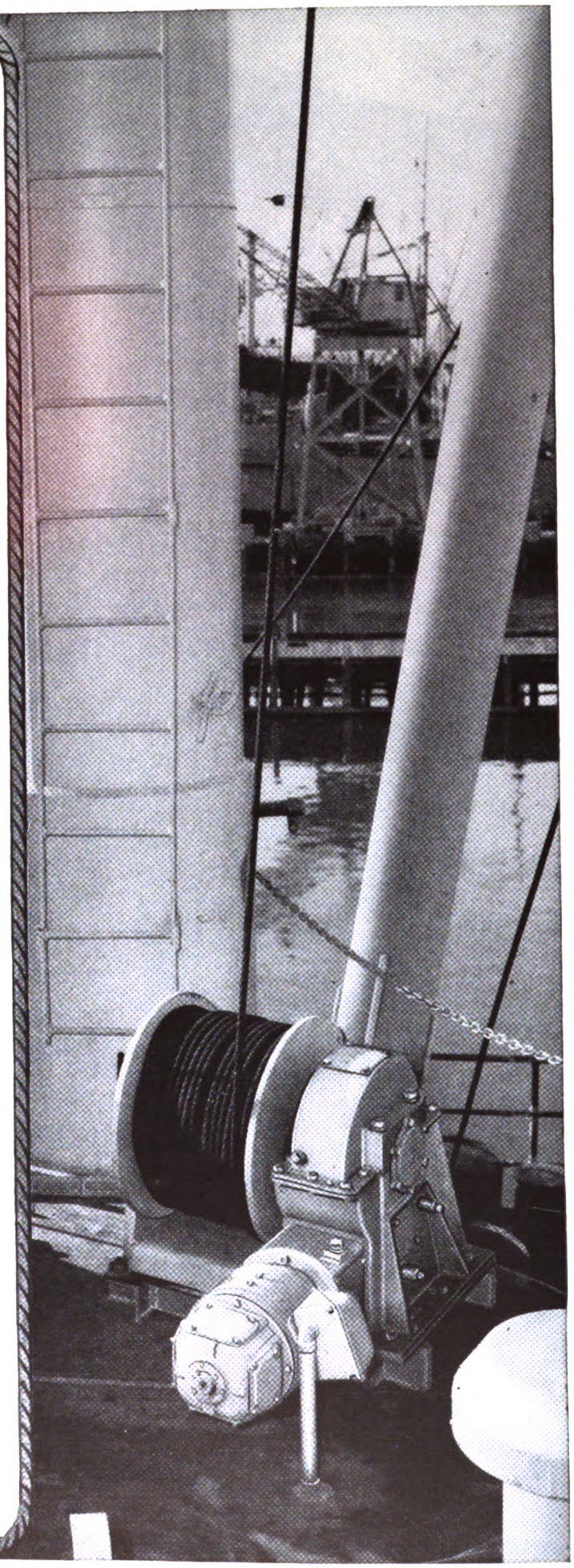
Design, installation, and operation are amazingly simple. The American Boom Topping Winch mounts horizontally or vertically on the mast, king post, deck house or elsewhere. One simple control lever —located at any point desired—governs all motions. In addition to raising or lowering the empty boom, it will hold a full load at any angle, without the slightest danger of accidental dropping.

Want the details? Inquire at any "American Hoist" sales office (located in all principal ports) for literature and prices.

American Hoist
and DERRICK COMPANY
St. Paul 1, Minnesota

Plant No. 2: So. Kearny, N. J.
Sales Offices: NEW YORK • PITTSBURGH • CHICAGO

91507



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Developed by Shell scientists—

SHELL NAUTILUS OIL

a new, improved reciprocating marine engine oil





The problem with an external bearing lubricant—

is, as you know, to keep the oil emulsion stable. You've probably seen how some heavily compounded oils for this type of marine engine tend to separate . . . "gum" the feed flow . . . form sludge in storage tanks. Our lubrication men studied the problem . . . figured Shell could solve it.



Shell scientists found the answer—

in new petroleum additives, many of them formulated by Shell research. With these additives, they first developed a superior moisture-absorbing lubricant which would make a *longer-lasting* emulsion. Then they combined this new lubricant with the *best operating qualities* of rapeseed oil. The result was Shell Nautilus Oil. *And it proved to give better service than we'd expected!*

What you can expect from Shell Nautilus Oil

A free and easy flow, for one thing . . . without clogging of wick feed systems. For another, the highly adhesive lather it forms will stick to crosshead, crank pin, rod and other bearing surfaces *under the worst kind of moisture conditions.* And its emulsion lasts *indefinitely* . . . which means you use less gallonage because Shell Nautilus Oil doesn't sludge out in storage tanks. Why not measure the economy of this improved marine lubricating oil in your own ship's engine soon?

SHELL

SHELL NAUTILUS OIL IS AVAILABLE IN ALL MAJOR WORLD PORTS. CONTACT YOUR NEAREST SHELL OFFICE OR SHELL REPRESENTATIVE.

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FOR STEAM SPECIALTIES

San Francisco

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We Have One of the Largest Stocks of
High Pressure Valves on the Pacific Coast

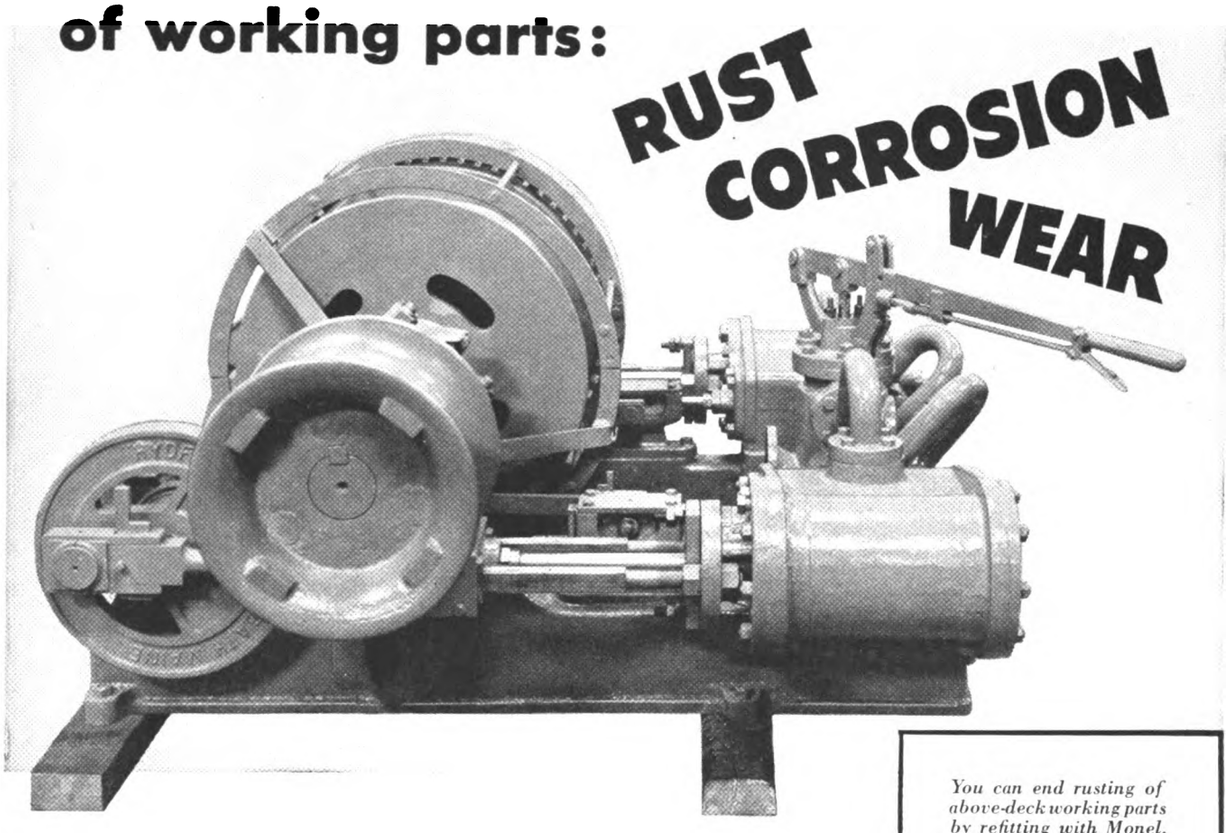
Anchor Equipment Company

SAN FRANCISCO

PIER THREE - - GARFIELD 1-6506

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MONEL LICKS the 3 worst enemies of working parts:



You can end rusting of above-deck working parts by refitting with Monel. This cargo winch, for example, withstood more than 20 years of service, thanks to use of Monel for all steam piston rods, steam slide valve rods, and for the throttle valve operating stem. Exposure at sea won't make Monel parts stick and fail in port.

You meet them every day... those three deadly enemies of working parts of boats and equipment. Together, they keep maintenance costs high by causing lay-ups, deterioration, and dangerous breakdowns.

But one weapon will get rid of all three! That weapon is MONEL*, the hard, tough, seagoin' Nickel Alloy. MONEL resists salt-water corrosion, fights abrasion and steam-erosion, and can *never* rust.

That's why engineers everywhere are specifying MONEL for replacement **parts. MONEL is available in many time-saving ready-to-use forms, such as fastenings; propeller shafts, stoves, sinks; sheet for galley equipment and tanks; parts for pumps and engines. And since MONEL can be readily machined, brazed, welded, and soldered, you can make special replacements in your own shop. Monel rod, sheet, plate, and fastenings are available from stocks of many local sources of supply for Inco Nickel Alloys.**

Call for MONEL on your next repair job... and forget rust and corrosion worries!

*Reg. U. S. Pat. Off.

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THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York 5, N. Y.

Monel*... "It's the SEAGOIN'* metal"

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new RUBBERIZED deck coating lasts a WHOLE YEAR

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- SS " Merchant
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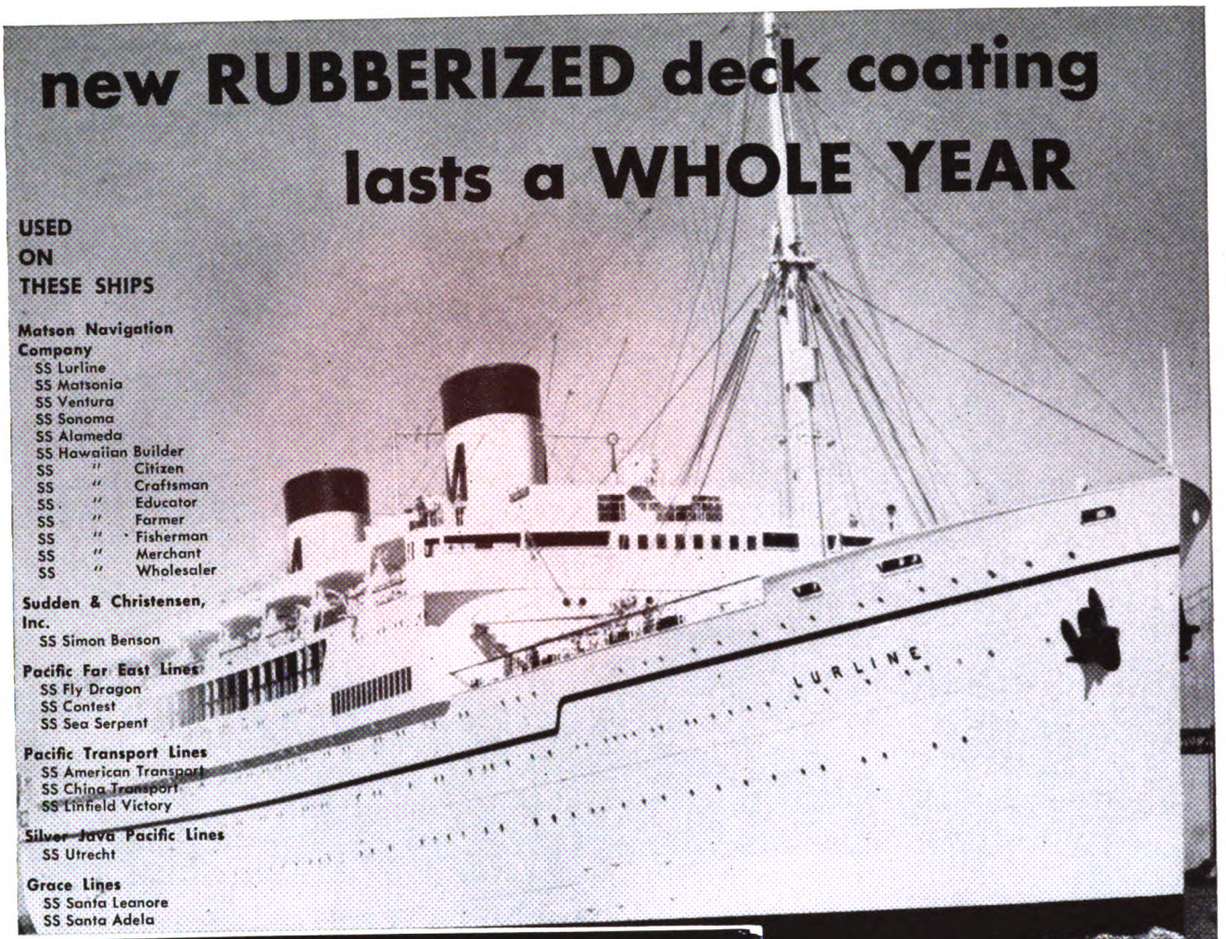
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- SS Simon Benson

Pacific Far East Lines
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- SS Sea Serpent

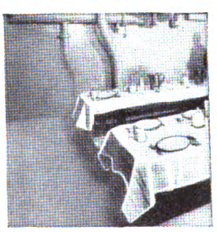
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WHEN USED WITH Steelcote PROCESS 1-2-3-4 for MAGNESITE DECKS



Save time, save money, save inconvenience. Actual ship tests prove you can do all these and have more beautiful floors too. Ask for details of Steelcote Floor Process at the ports listed at right or Steelcote Mfg. Co., St. Louis, Mo.



Save the cost of deck coating every few months — have more beautiful floors that water alone will clean

other Steelcote Problem-Solving Products

Transform mouldy, dingy, rusty shower and bath rooms into gleaming, porcelain-like beauty with Steelcote Damp-Tex No. 2 Pre-treated. Ready for use one hour after painting. Also **recommended for shaft alleys, bilges, deep tanks and bottoms. Damp-Tex Regular Pre-treated also resists rust, germs, mildew, does not contaminate food. Use on deep tanks, fresh water tanks, reefer boxes and refrigeration areas. Both products easy to apply to wet or dry surfaces.**

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Honolulu, T. H. — LEWERS & COOKE LTD.
Houston — GULF ENGINEERING CO., INC.
Mobile — MARINE SPECIALTIES COMPANY
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Newport News — SELBY, BATTERSBY CO., INC.
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For the past 28 years Radiomarine has provided the merchant marine with specially trained radio and electronic service technicians. They visit ships in the major domestic ports . . . check equipment for high-quality performance and make necessary repairs . . . render day and night emergency service . . . instruct the ship's personnel how to operate the equipment proficiently . . . and keep radio and radar equipment in conformity with government regulations.

Radiomarine is the only radio and radar manufacturer that offers a single comprehensive marine electronic equipment service plan. Radiomarine is the only company making such equipment that designs, engineers, manufactures, sells, installs and services with a wholly-owned field service organization, specializing entirely in the marine field.

Over 100 Radiomarine service technicians—in 29 fully-equipped Radiomarine Service Stations on the Atlantic, Pacific and Gulf Coasts, on the Great Lakes and the Ohio and Mississippi Rivers—are ready to service the electronic equipment aboard your ships. Overseas, Radiomarine service facilities are available at the principal foreign ports through affiliated foreign radio companies and distributors and dealers of the RCA International Division.

As part of its well-rounded service in the marine field, Radiomarine's 13 coastal stations provide unsurpassed ship-to-shore and shore-to-ship communication for contact with vessels in all parts of the world.

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Wherever your ships go, they'll find experienced and dependable Radiomarine Service—unsurpassed service that keeps ships operating efficiently, earning dividends. Write to Department 14F, for complete details of the Radiomarine Service Plan.

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1849 - 1949

FULLER



At San Francisco, Fuller adds a

NEW MILLION-AND-A-HALF DOLLAR INDUSTRIAL PRODUCTS BUILDING

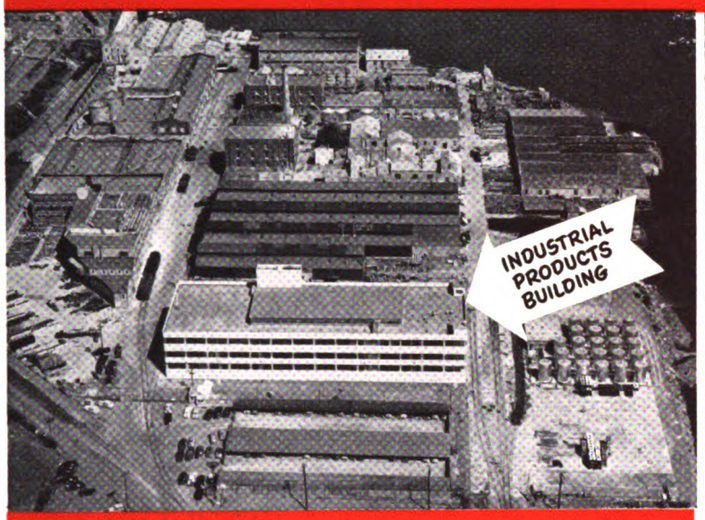
HIGHLIGHTS:

- **95,000 square feet—West's largest Industrial Products Building.**
- **200,000 gallon per month capacity—with space to double output.**
- **10,000 industrial finishes formulated covering automotive, woods, metals, plastics, leathers and composition surfaces.**
- **New 360,000 gallon Storage Tank Farm.**

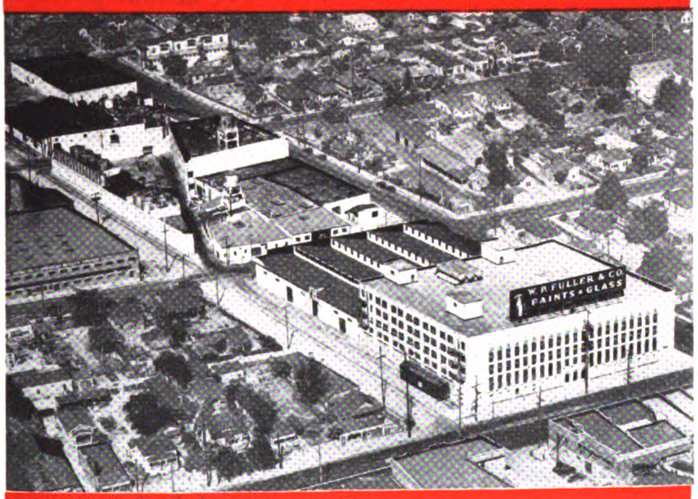
Fuller's abiding faith in the industrial West is typified by this signal forward step . . . Our new Industrial Products building further augments facilities that have made Fuller the leading Western supplier of industrial lacquers, synthetics and varnishes and plant maintenance products . . . Now, the finest known equipment, spaciously housed and scientifically streamlined, is at the disposal of the West's largest staff of industrial paint chemists and technicians, providing them with unsurpassed research and product control facilities . . . More than ever, Fuller is in a position to supply the diversified finish and protective coating needs of the West as no one else does—as no one else can.

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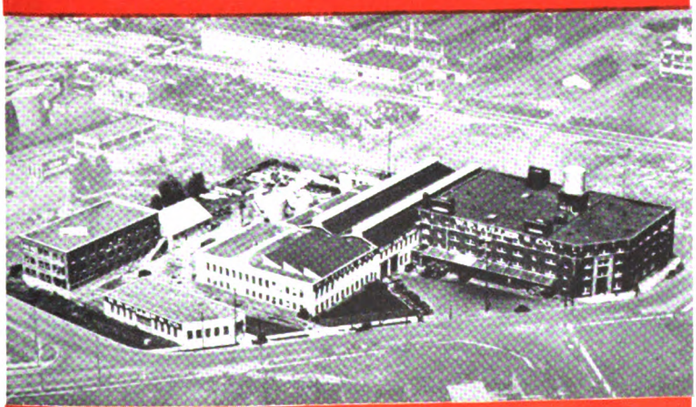
Celebrates its Centennial



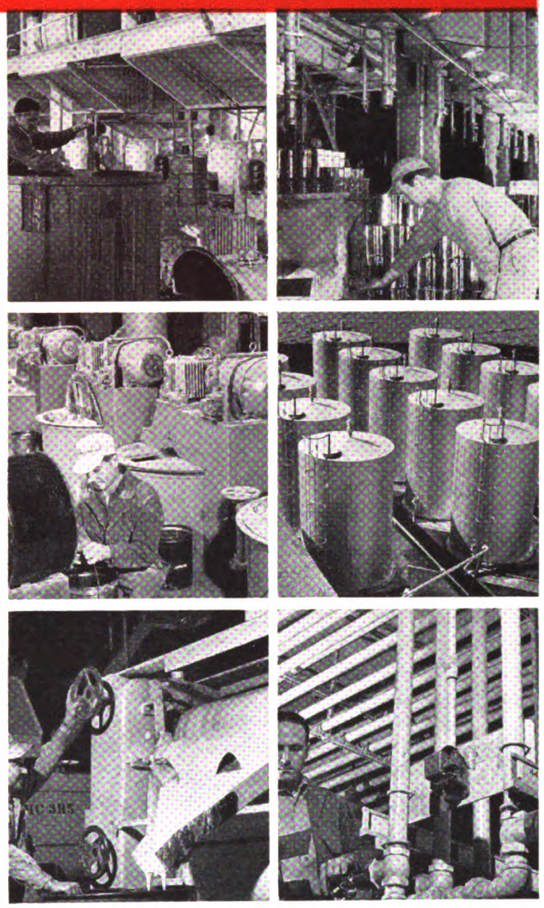
Huge South San Francisco Factory, showing new Industrial Products Building with its own Tank Farm.



Los Angeles Factory, Laboratory and Warehouses.



Portland Factory. Fuller's tri-city facilities exceed those of any combination of other like Western manufacturers.



Six scenes of some of modern equipment in new Industrial Products building. (Top, left) Battery of 34 500-gallon stationary agitator tanks on second floor. (Top, right) First floor outlets of stationary agitator tanks. (Middle, left) Section of 16 100-gallon paste mixers. (Middle, right) 12 of 24 new 15,000-gallon storage tanks. (Bottom, left) One of six roller mills, grinding white enamel base for synthetic finish. (Bottom, right) Small portion of the 50,000 feet of piping in new building.



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MARINE SPECIALTIES



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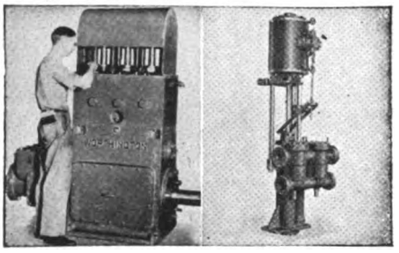
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WORTHINGTON PUMP AND MACHINERY CORPORATION

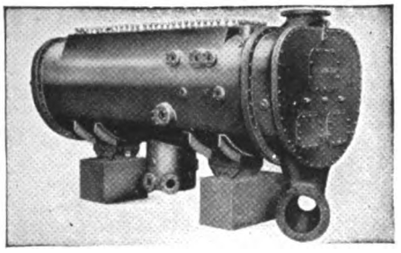
General Offices, Harrison, New Jersey

Works: Harrison, N. J., Newark, N. J., Buffalo, N. Y., Wellsville, N. Y., Holyoke, Mass.

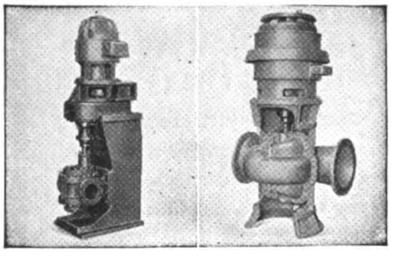


Variable capacity power pump for boiler feeding

High pressure steam pump for boiler feeding



Main steam condenser of special marine surface type



Vertical rotary pump for fuel oil transfer and lube oil service

Vertical centrifugal pump for condenser circulating service



Spray type feedwater deaerator for marine service

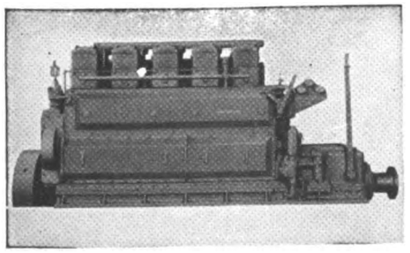
WORTHINGTON

The following listing and accompanying illustrations give a cross-section of the Worthington equipment serving the marine field. But they do not show what Worthington engineering is doing and has done during the past eighty-odd years to solve specialized marine pumping and power problems. You, too, are invited to make use of Worthington's consulting service without charge or obligation.

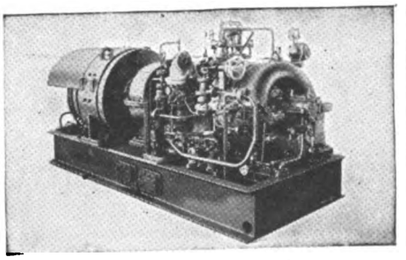
WORTHINGTON EQUIPMENT GIVING SHIPBOARD SERVICE

- *Steam Turbine Generator Units*
- *Multi-Stage Steam Turbines*
- *Single-Stage Steam Turbines*
- *Combined Turbines and Gear Units*
- *Centrifugal Pumps* — all types and capacities for all shipboard services
- *Reciprocating Pumps* — steam driven, motor driven and variable capacity pumps
- *Rotary Gear Pumps* — for handling oils and viscous liquids
- *Vertical Turbine Pumps* — for bilge service, main cargo and stripping
- *Steam Condensers and Steam-Jet Ejectors* — for all shipboard vacuum services
- *Deaerating Feed Water Heaters*
- *Air Compressors*
- *Diesel Engines*—for ship services
- *Refrigerating and Air Conditioning Equipment*
- *Multi-V-Belt Drives* — complete drives; sheaves or belts only
- *Liquid Meters* — all types: hot or cold water, oil, etc.

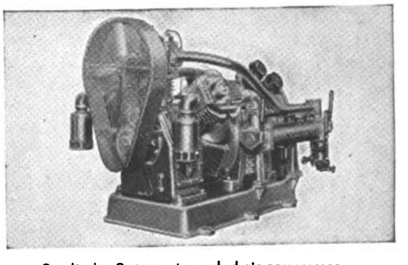
M6-2



Direct reversible 8-cylinder marine Diesel propulsion engine

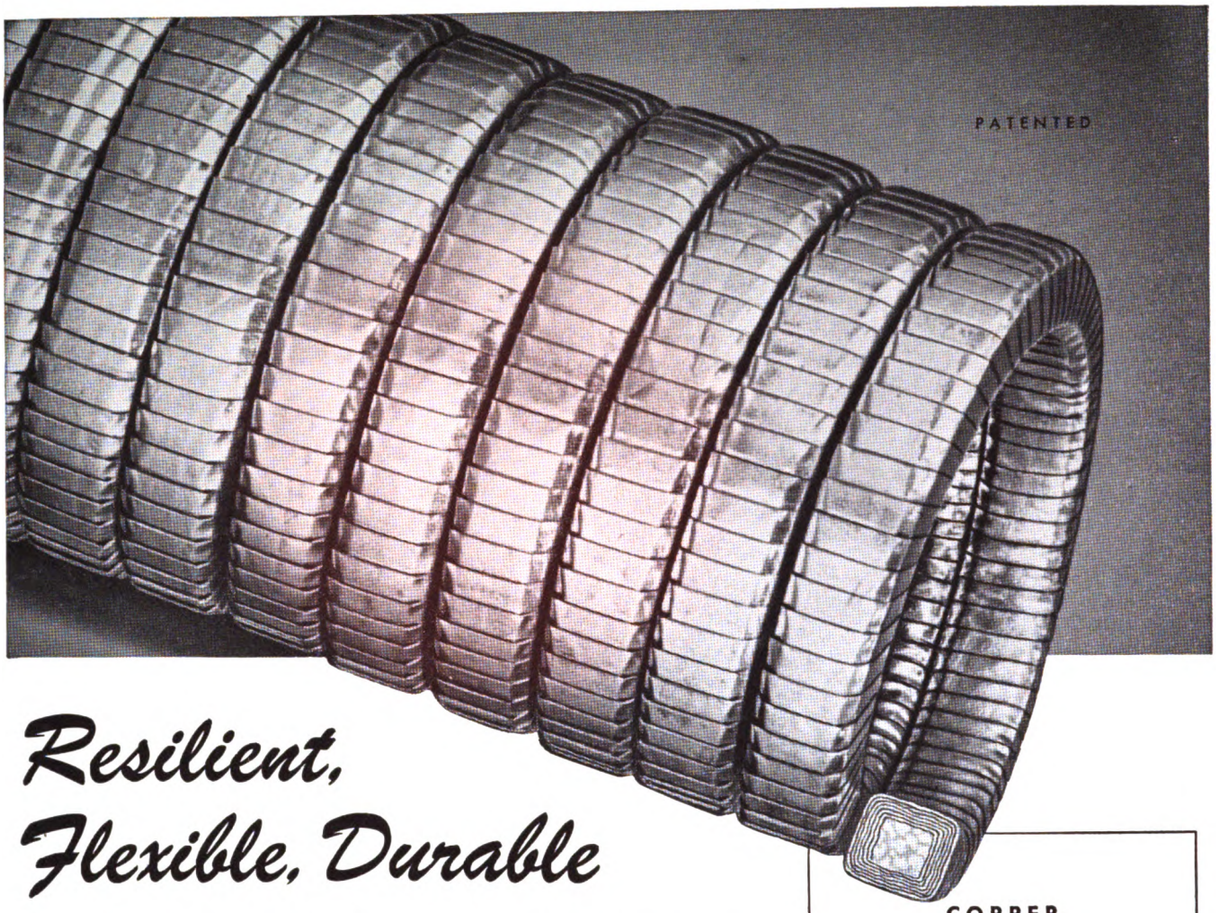


300 k.w. geared condenser type turbine generator unit for auxiliary power and lights



3-cylinder 2-stage air-cooled air compressor for ship service

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Resilient, Flexible, Durable

YOU LIKE fibrous packing because it is resilient; and you like metal packing because of the durability of the metal wearing surfaces in contact with the rod or shaft.

To give you *both* of these desirable qualities, Garlock has developed a new line of Metal Foil Packings by wrapping a thin metal foil spirally around a fibrous center core.

A patented, pleated foil construction used in several of these new Garlock packings imparts unusual flexibility to the packing and permits the forming of rings without undue distortion of the material. Also the many small pockets in the pleats or folds of the foil carry lubricant or graphite to the wearing surface of the packing.

Garlock Metal Foil Packings are recommended for centrifugal or reciprocating pumps, compressors, engines, expansion joints, etc. Write for descriptive folder.

THE GARLOCK PACKING COMPANY
PALMYRA, NEW YORK

San Francisco • Los Angeles • Seattle • Portland

COPPER

GARLOCK 906—Pleated copper foil with asbestos core for steam, air or gases (except ammonia) and hot oils of low sulphur content, at temperatures up to 1000° F.

ALUMINUM

GARLOCK 913—Pleated aluminum foil with asbestos core for hot oils at temperatures up to 1000° F.

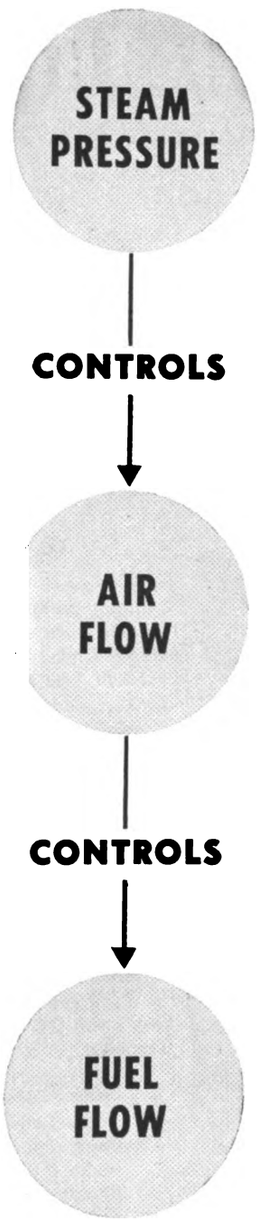
LEAD

GARLOCK 917—Pleated lead foil with asbestos core for steam, air, oil, water, ammonia or other gases at temperatures up to 550° F.

GARLOCK METAL FOIL PACKINGS

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Simple, direct, safe HAGAN automatic combustion control



In the Hagan System of automatic combustion control, steam pressure controls air flow, and air flow in turn controls fuel flow.

This sequence is in itself assurance of safe operation, for any reduction of air flow immediately decreases fuel flow to an amount that can be burned with the available air. The normal operation of the control is a guarantee that the safety feature is in operation.

Since no external interlocks are necessary for safety, it has been possible to keep the design of the system extremely simple. Installation and maintenance both are considerably easier with the Hagan Control than with any other system.

A full discussion of the Hagan Control appeared in the October 1945 issue of THE LOG, under the title "Marine Combustion Control Operation, Maintenance and Design." If you would like a copy of this, just fill out the coupon below.

Hagan Corporation, Hagan Building, Pittsburgh 30, Pennsylvania.

HAGAN

Hagan Corporation, Hagan Building
Pittsburgh 30, Pennsylvania

Please send me a copy of the article "Marine Combustion Control Operation, Maintenance and Design."

Name.....

City.....

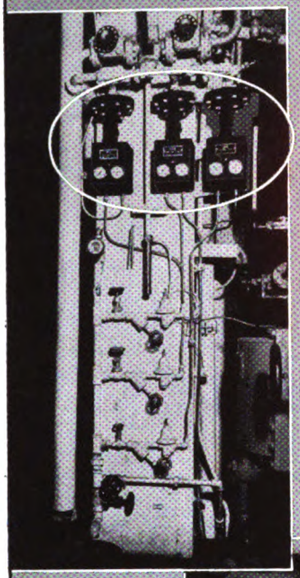
Street.....

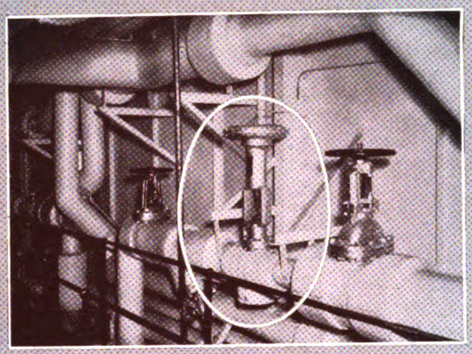
State.....

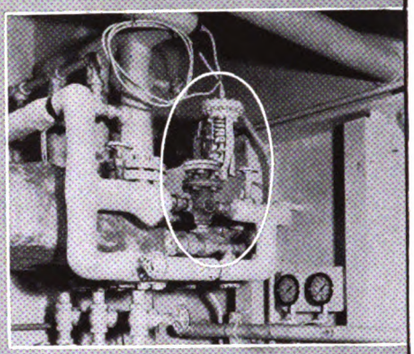
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MODERN TANKERS

are getting Dependable Control with LESLIE Regulators, Controllers and Whistles

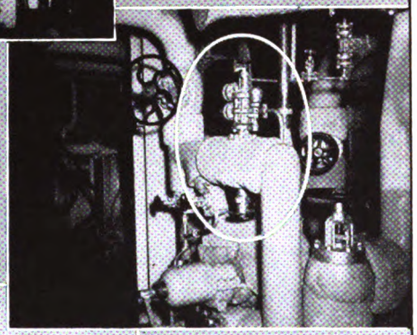






Above: Pressure Controller for High Pressure Make-up to Turbine Bleed Steam

Above right: Temperature Regulator for Fuel Oil Heater, combination pressure—temperature control



Above: Control Pilots for Back Pressure Control of Engine Room and Deck Exhaust Steam



Above: Pump Governor for Turbine-Driven Centrifugal Main Feed Pump

Left: Dual LESLIE-TYFON Steam Whistles in full blast

Marine design engineers, operators and builders have proved once again that LESLIE is their choice for the most dependable regulating equipment for Marine Service. As a result, you will find LESLIE equipment on all of the large tankers under construction in the United States in 1949. The following services are being handled:

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Auxiliary Steam Systems
Steam to Air Ejectors
Steam to Heating Systems
Steam to Cargo Heating
Gland Sealing Steam
Deck Steam System
Steam to Generators
Steam to Whistle
Steam Smothering Systems

PRESSURE CONTROLLERS for

Back Pressure Control for Engine Room Exhaust
Back Pressure Control for Deck Exhaust
Back Pressure Control for Cargo Pump Exhaust
Low Lube Oil Trips
Make-up to Turbine Bleed Steam
Gland Sealing Steam
Low Pressure Air Safety Shutoff

PUMP GOVERNORS for

Main Feed Pumps
Aux. Feed Pumps
Lube Oil Pumps
Fuel Oil Pumps
Sanitary Pumps
Fresh Water Pumps

TEMPERATURE REGULATORS for

Fuel Oil Heaters
Lube Oil Heaters
Hot Water Systems
Butterworth Systems
Contaminated Water Evaporators

LESLIE SELF-CLEANING STRAINERS

LESLIE-TYFON WHISTLES and AUTOMATIC CONTROLS

Lowest Overall Cost per Operating Year

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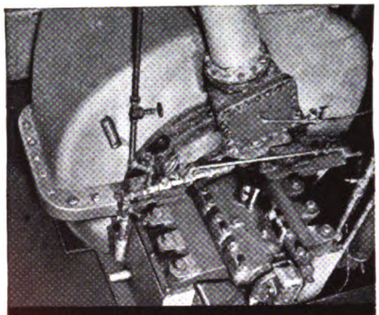
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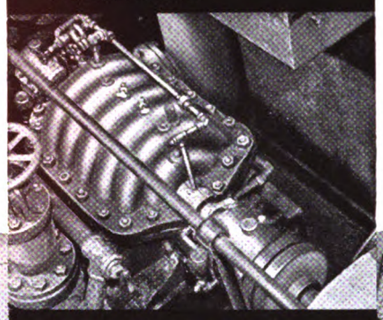
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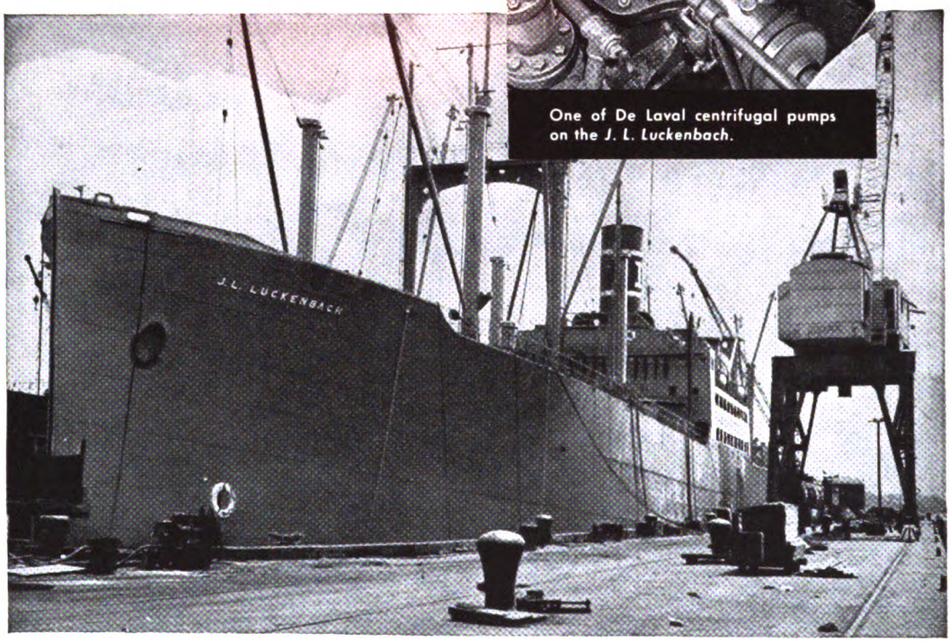


De Laval turbine still in use after 28 years of service.



One of De Laval centrifugal pumps on the *J. L. Luckenbach.*

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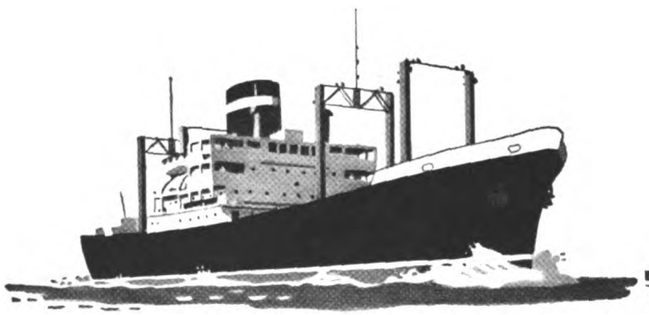
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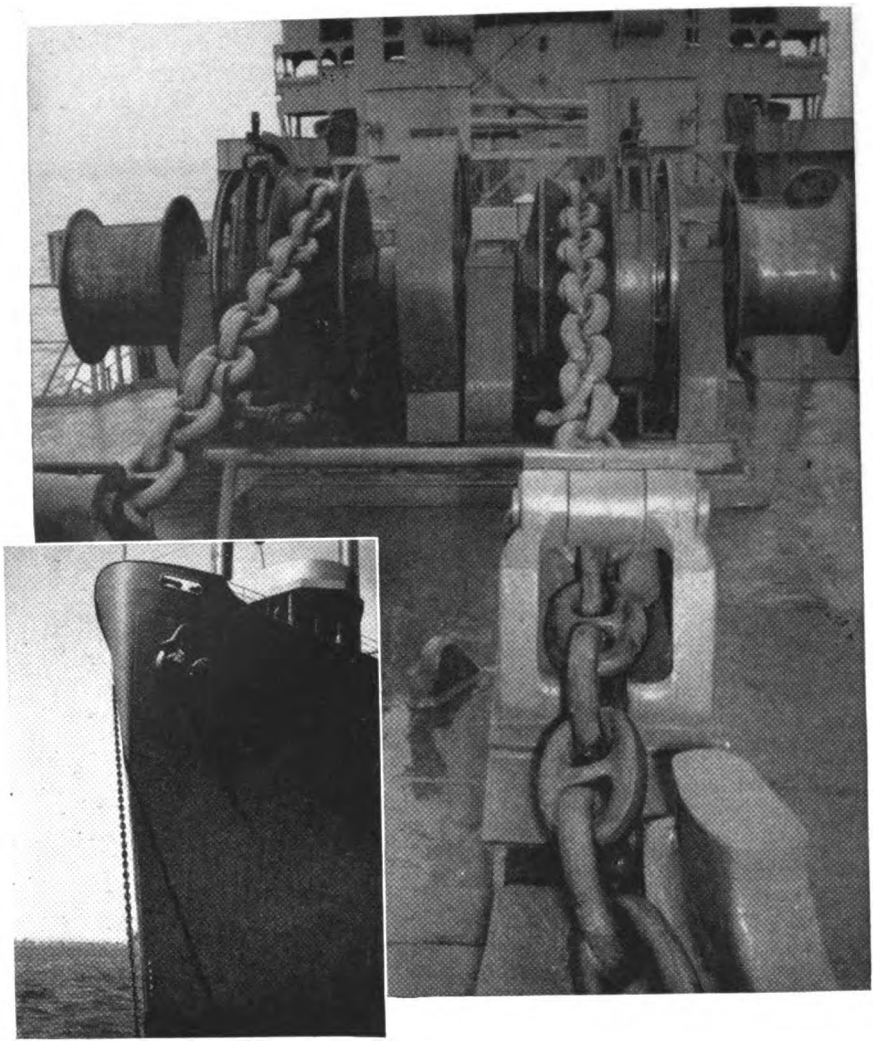
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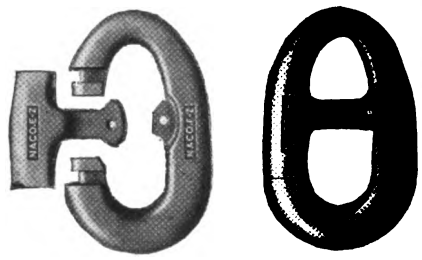
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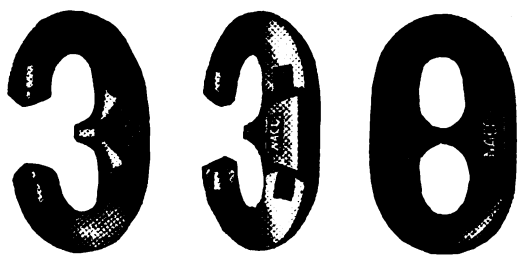
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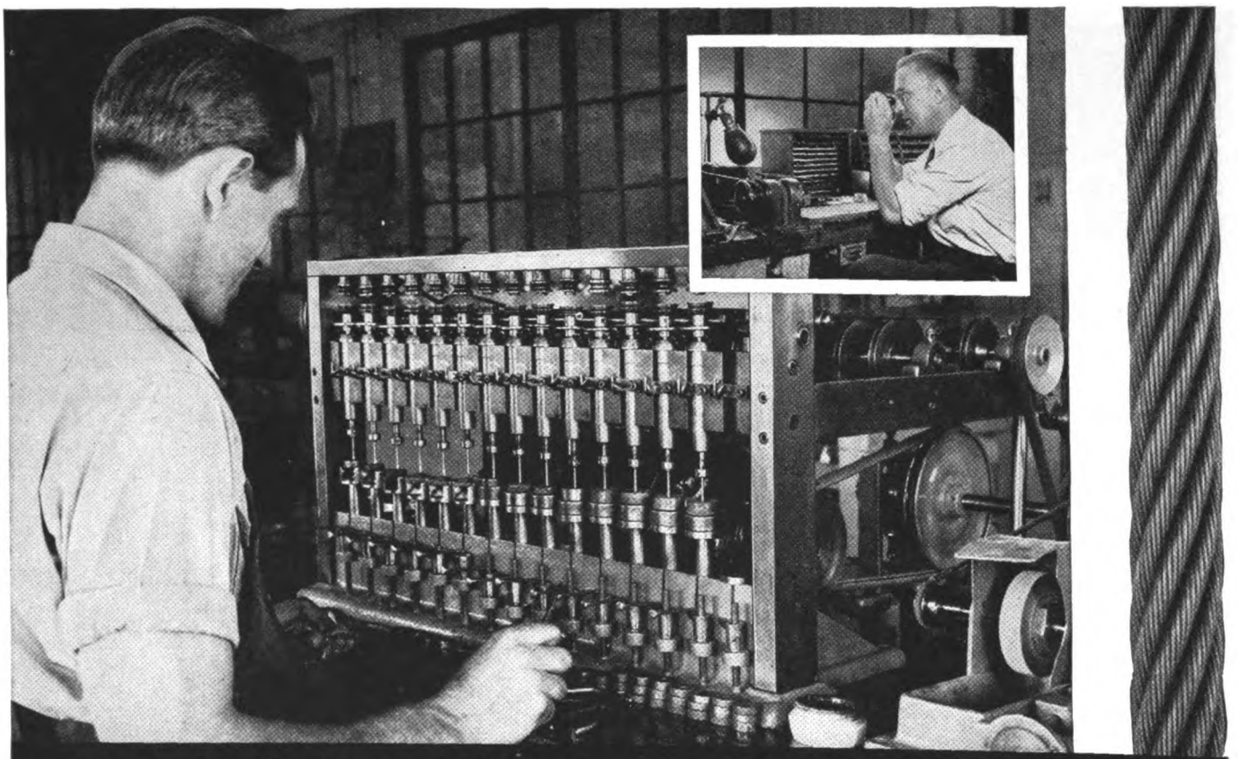
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THIS 82-PAGE BOOK ON WIRE ROPE IS FREE. WRITE FOR YOUR COPY TODAY!

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WICKWIRE ROPE

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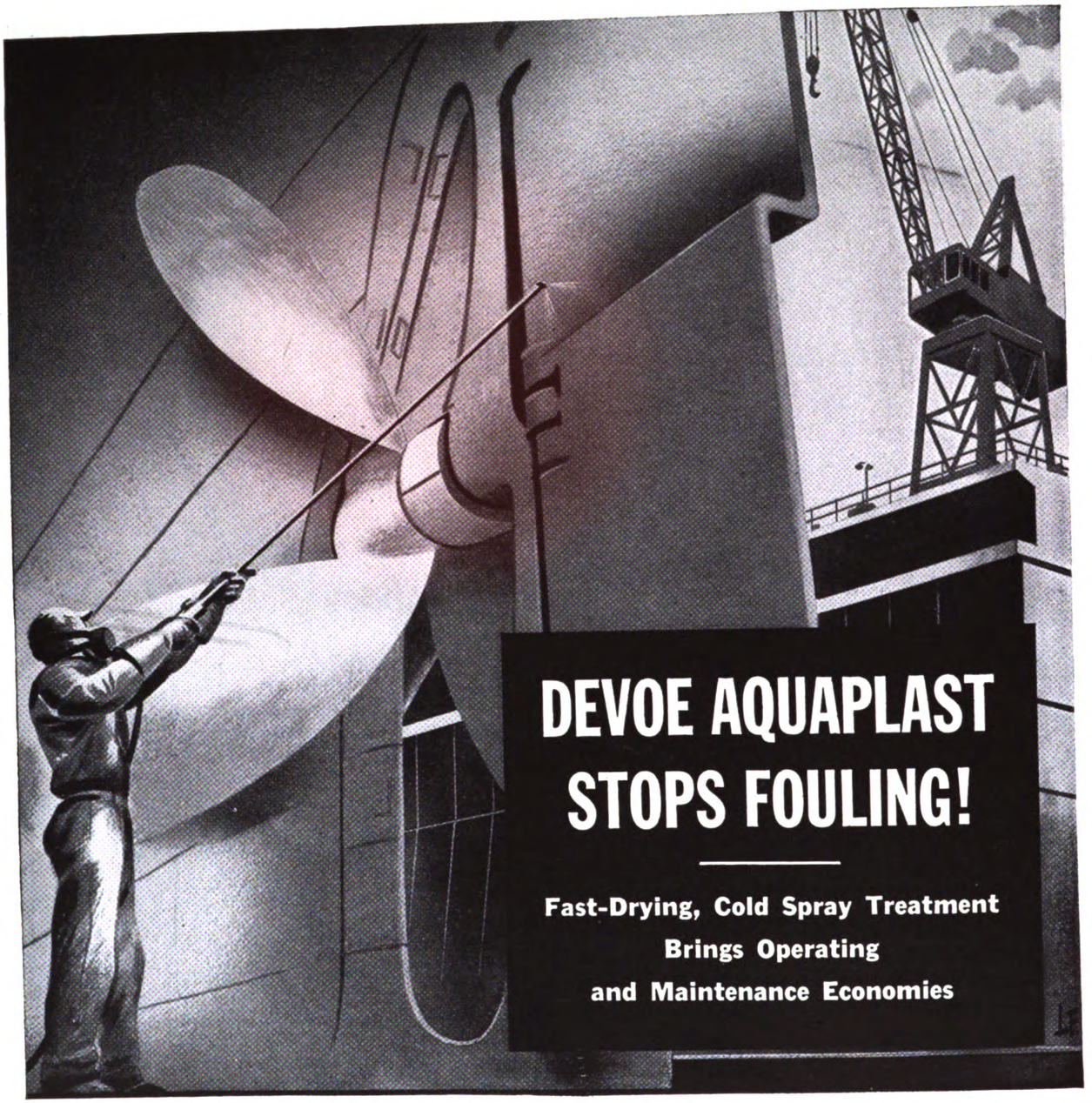
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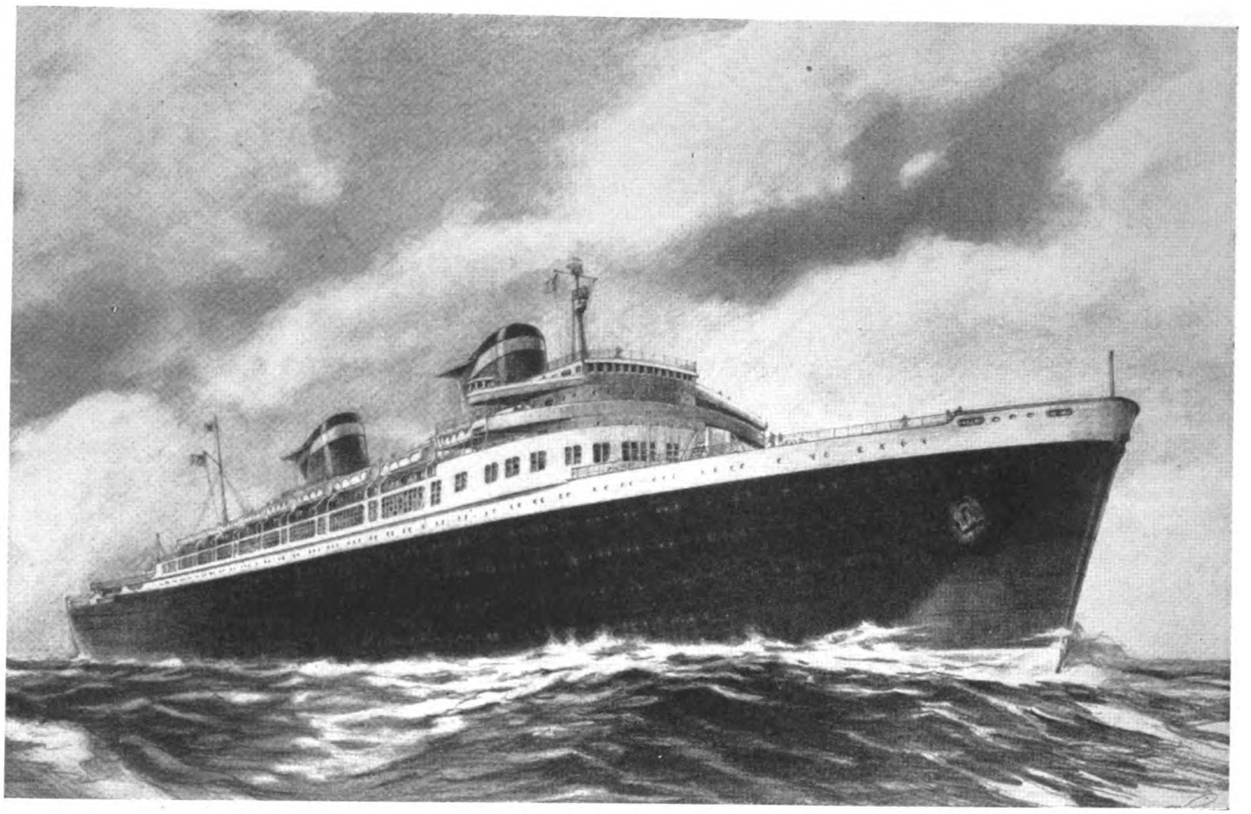
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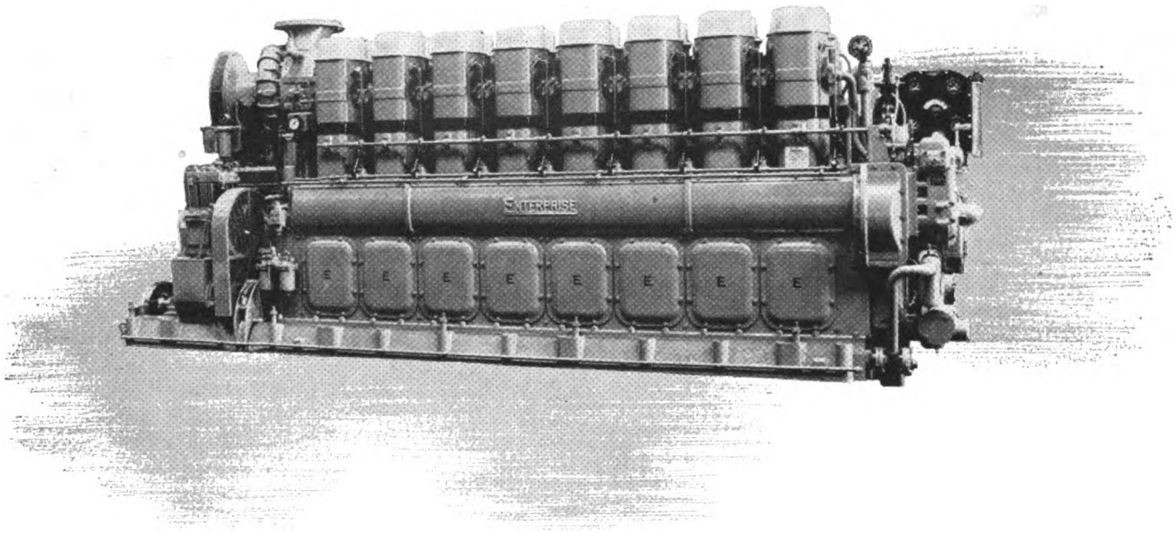
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Maybe you can profit by steel mill experience

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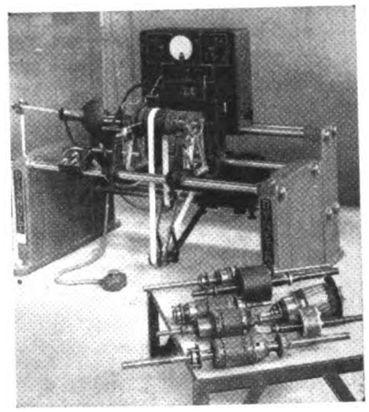


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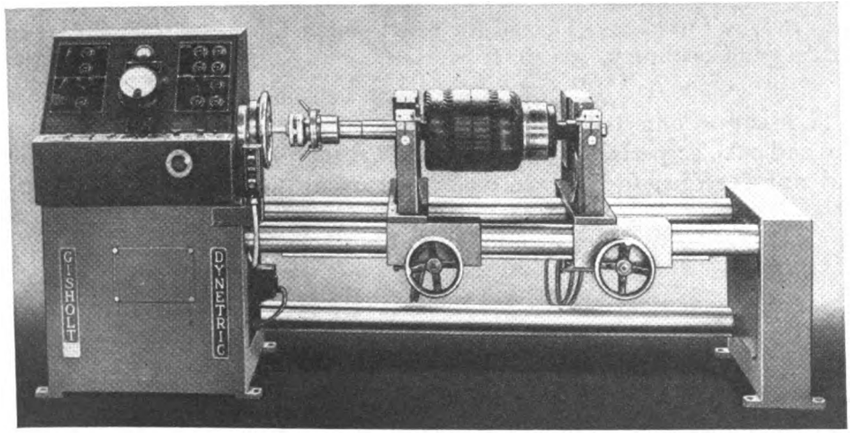
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Repaired and rebuilt motors, generators, etc., can be expected to perform like new. And many old parts will last even longer than original equipment due to the extreme accuracy of balance made possible by these remarkable machines.

Gisholt Dynetric Balancers can measure unbalance vibrations down to 25 millionths of an inch—a degree of accuracy not possible by any other means.

Take Advantage of Our Complete Service

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Our new Type-S Gisholt Balancer. Used to eliminate unbalance and assure trouble-free, vibrationless operation in many smaller parts such as armatures, fans, etc., ranging up to 200 pounds in weight. Come in and see these machines in operation.

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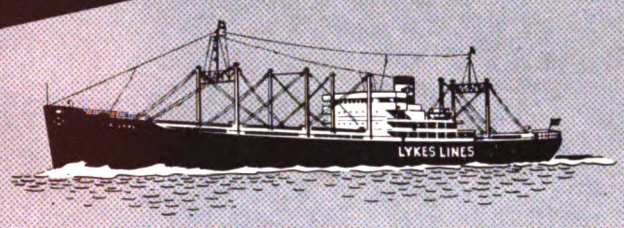
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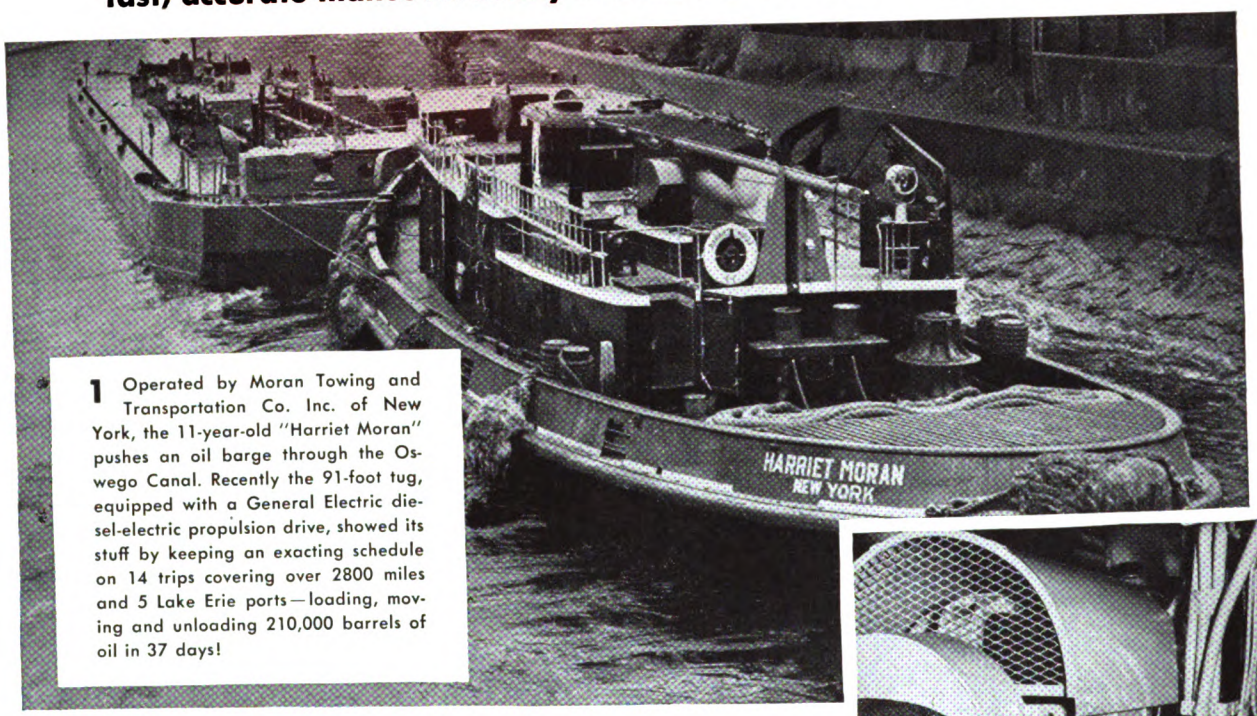
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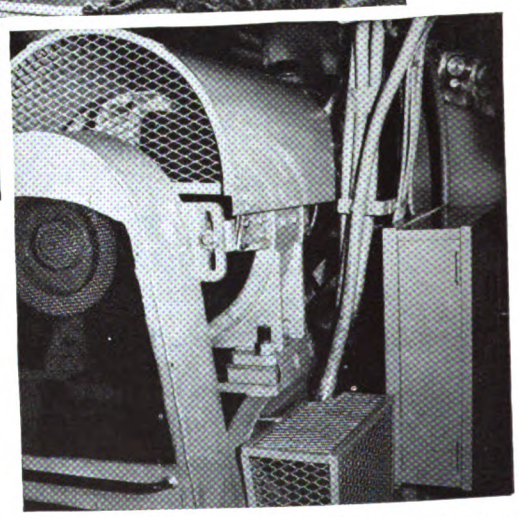
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MORAN TUG KEEPS 2800 MILES IN 37

Dependable General Electric diesel-electric propulsion drive helps veteran "Harriet Moran" shuttle oil barges with time-table regularity—provides fast, accurate maneuverability needed for crowded harbors and lake ports



1 Operated by Moran Towing and Transportation Co. Inc. of New York, the 11-year-old "Harriet Moran" pushes an oil barge through the Oswego Canal. Recently the 91-foot tug, equipped with a General Electric diesel-electric propulsion drive, showed its stuff by keeping an exacting schedule on 14 trips covering over 2800 miles and 5 Lake Erie ports—loading, moving and unloading 210,000 barrels of oil in 37 days!



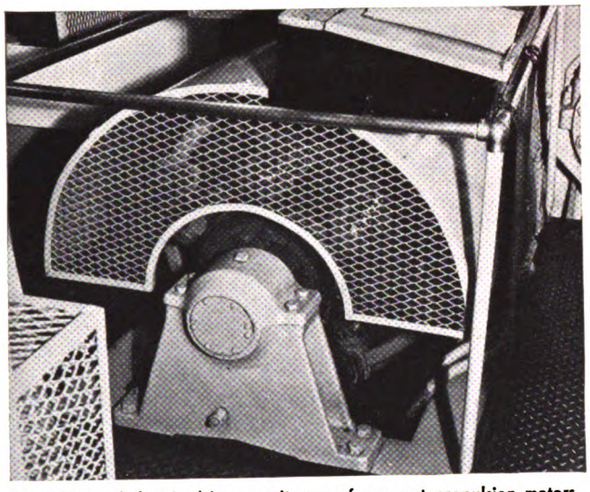
2 In service since 1938, the "Harriet Moran" spent several years in the Navy. Despite this extra-heavy service, its G-E equipment has required only routine maintenance during the regular annual overhaul of all Moran tugs. Here is one of two 400-kw G-E generators with its 24-kw exciter-generator in the engine room, with switch panel at right. Either one or both generators can be used, for reduced or full-speed operation.

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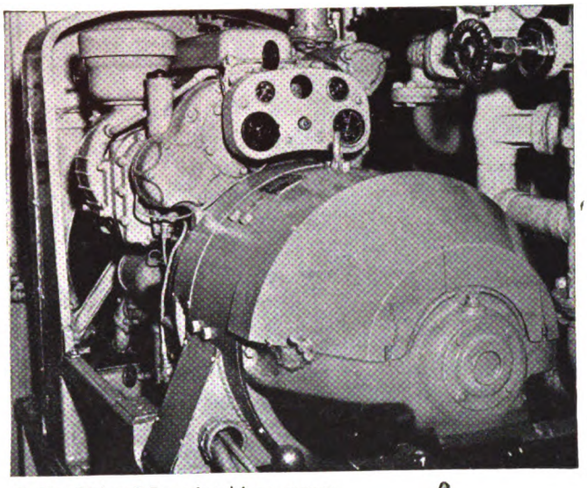
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HEAVY SCHEDULE—

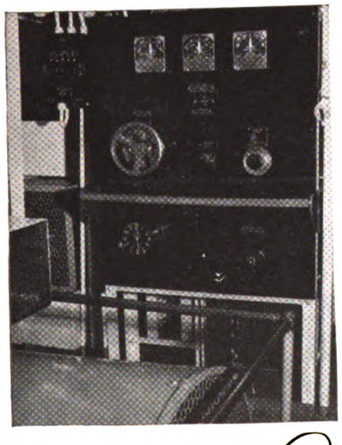
DAYS ON 14 TRIPS!



3 G-E diesel-electric drive permits use of compact propulsion motors, connected to the propeller shaft either directly or through gearing. This G-E d-c motor, one of two 500-hp motors on the tug, uses a reduction gear. Another advantage of this type of drive is the wide latitude it allows in arranging machinery. This makes for efficient use of limited engine-room area, saves valuable deck and cargo space.



4 This 30-kw G-E engine-driven generator is used in the "Harriet Moran" as a standby source of power for lighting and auxiliaries. A wealth of auxiliary power is available with G-E diesel-electric drive because the main generators, too, constitute a universal power plant when a ship is standing by or in port.



5 Operation of the tug's propulsion generators and motors is centralized in this G-E control panel in the engine room. The main handwheel operates a controller that determines the direction and speed of the tug. Flexible control and quick reversal in a G-E diesel-electric drive make for rapid maneuvering, important for vessels operating in crowded waters.



6 The tug may be operated either from the engine room or from one of three control pedestals similar to this, located at pilot house, bridge and after deck. For full information on diesel-electric and other types of marine propulsion and auxiliaries, as well as the cost-saving Keep 'Em Sailing Service, check with your G-E representative. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

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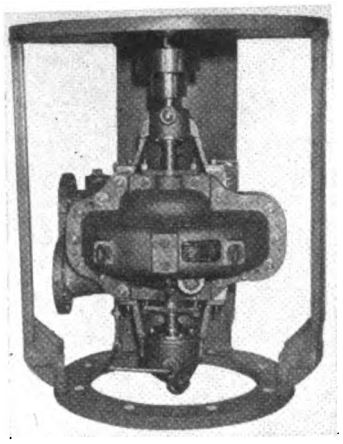
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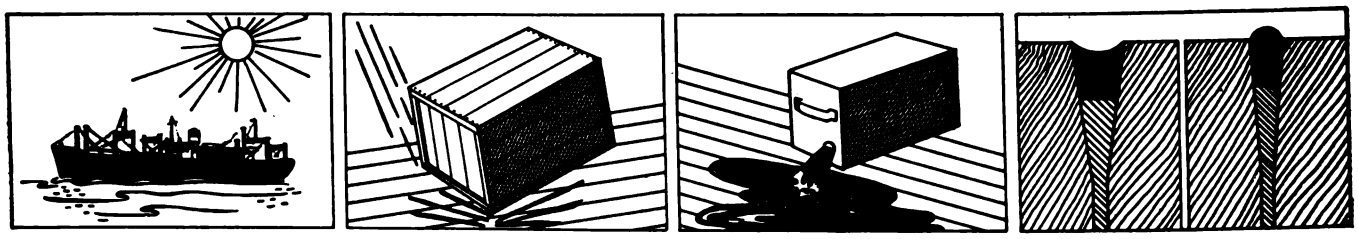
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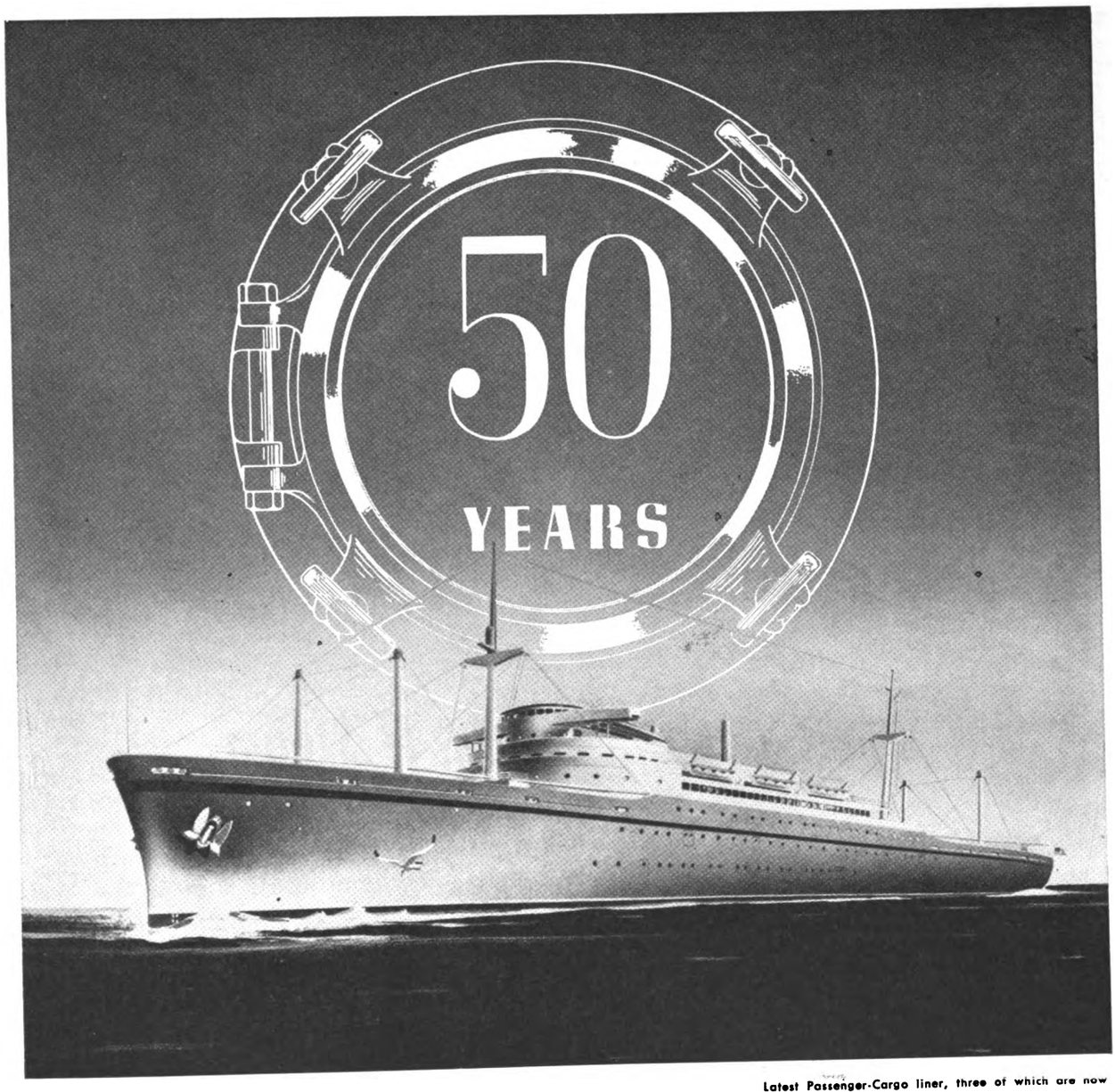
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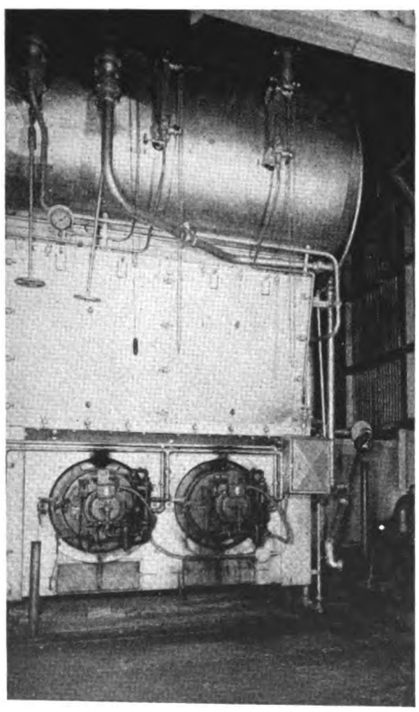
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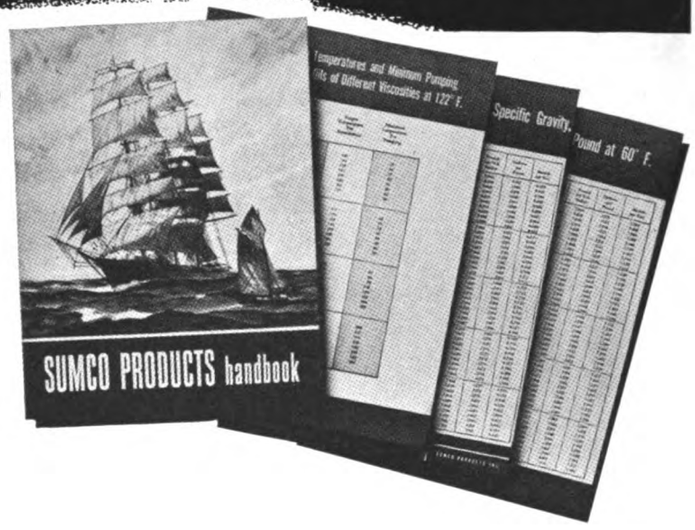
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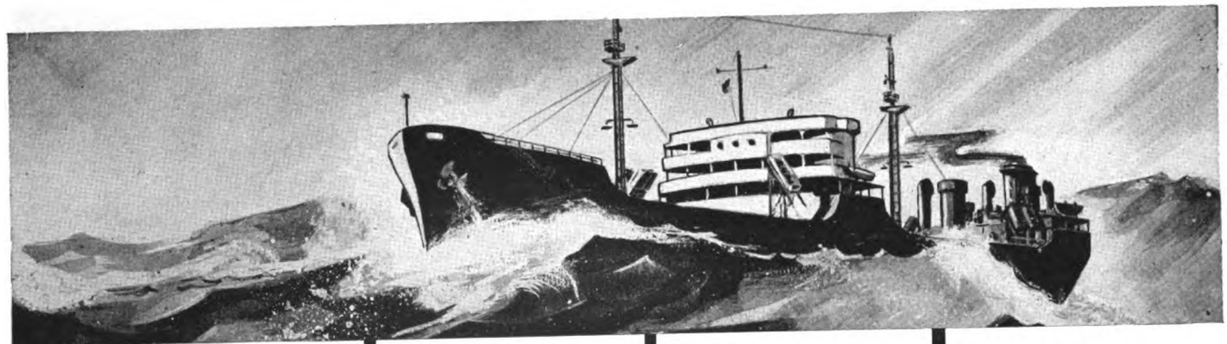
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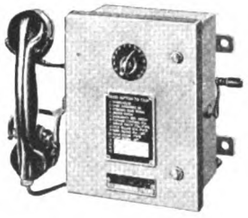
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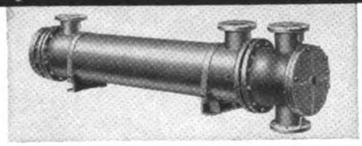
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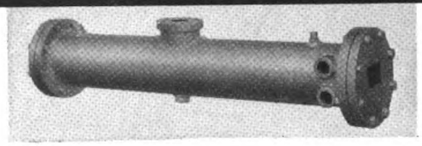




Type "CP". Shell and tube. Coolers for lube oil, jacket water, air, gas, brine, drain, refrigerants, gear oil; condensers for vapor, ammonia, freon; etc.

Complete data in Bulletin 2.1K1

HEATERS, OIL

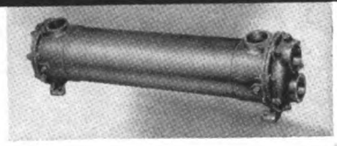


Type "O". Shell and tube. For preheating fuel oil and heating lubricating oil. Instantaneous. Many features for easy cleaning and inspection.



Complete data in Bulletin 3624-A

COOLERS (SMALLER SIZES)

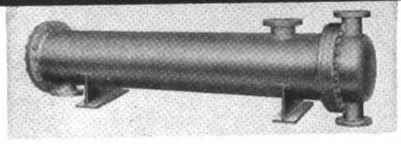




Type "BCF". Shell and tube. For smaller Diesel and gas engines, reduction gears, thrust bearings, turbine oil, hydraulic presses.

Complete data in Bulletin 1.1K1

HEATERS, INSTANTANEOUS

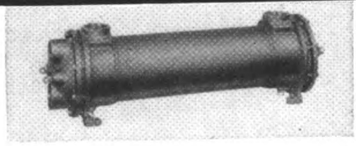


Types "IS" and "IU". Shell and tube. Closed type feed water, service water, hot water converters, air under pressure, chemical solutions, condensate, gas and oil.



Complete data in Bulletin 3623

COOLERS (MARINE ONLY)





Type "BCP". Shell and tube. Cools lube oil and fresh water in all type ship's Diesels and air compressors; lube oil in turbines, battery and oil engines, reduction gears, hydraulic clutches, forced draft blowers, pumps.

Complete data in Bulletin 2.2K1

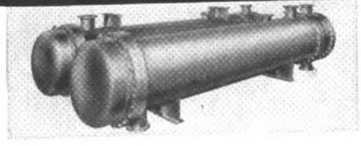
CONDENSERS, SURFACE



Pioneer and leader in standardized line of all-welded steel construction. Design fulfills all naval and marine requirements. Many special built-in features for ease and convenience of operation and maintenance.

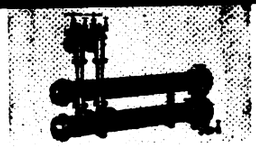


HEAT EXCHANGERS



Shell and tube designs for all operating conditions. Standard and specially engineered construction. Furnished in steel, admiralty metal, stainless steel and special alloys. Rugged and leakproof. Easy accessibility for inspection and cleaning. Maximum heat transfer. *Specific details on request*

EJECTORS, STEAM JET



Most satisfactory system for producing high vacua. Operates at all pressures. No lubrication. No moving parts. Supplied with either barometric or surface type inter and after condensers. Easy to install. ***Specific details on request***

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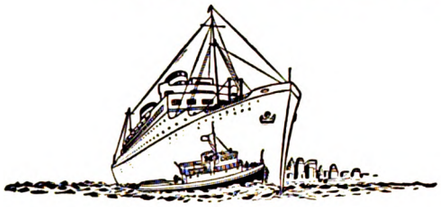
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FIRST OF A FLEET

OF FIVE POWERFUL

DIESEL-ELECTRIC HARBOR TUGS

FOR THE MORAN TOWING COMPANY OF NEW YORK



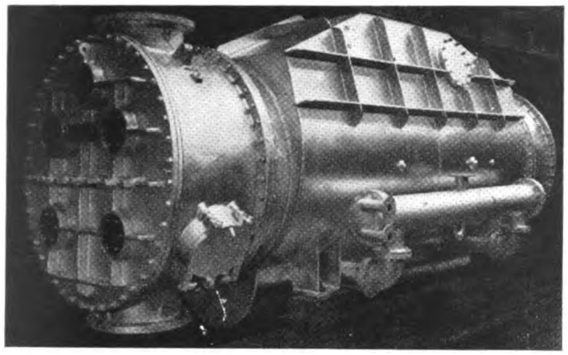
Levingston SHIPBUILDING CO.

ORANGE, TEXAS

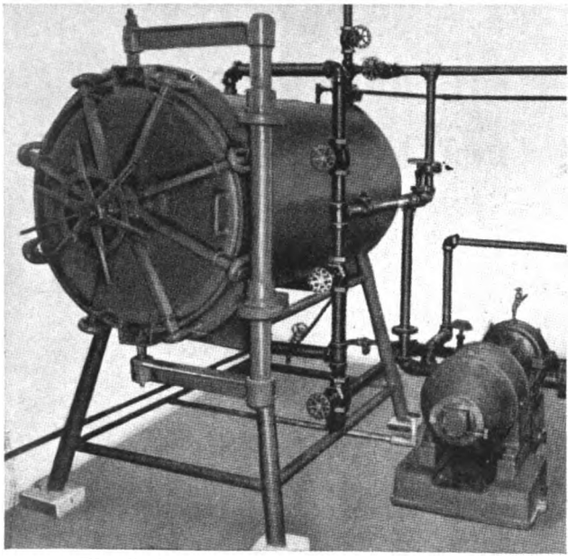
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Headquarters for MARINE CONDENSERS HEAT EXCHANGERS, PUMPS, STRAINERS, FILTERS and MAINTENANCE SERVICE

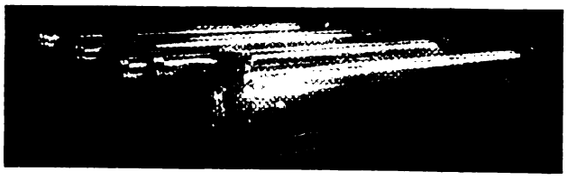
CONSECO



Conseco Steam Condenser



The Refiner—A Pressure Leaf Type Filter



Conseco Lubricating Oil Coolers

CONSECO MAINTENANCE SERVICE

Conseco maintains a highly trained service organization equipped with special tools developed by us to save time, labor, and material, ready for action any time of day or night, anywhere on the continent. Condensers, lube oil coolers, and other heat exchange equipment retubed or repaired in the shortest possible time. Years of intensive specialization in retubing work assure best results at lowest cost. Tube sheets, tubes, ferrules, and metallic, fibre or corset lace packing, as well as other necessary materials always stocked, ready for instant shipment.

The keynote of our service organization is fast, accurate, dependable service performed by competent, properly equipped men working under qualified engineering supervision. Why wait for an emergency? Write for details of our service, now.

CONDENSERS—Designed and built by men having a broad practical background of service and maintenance work, assuring efficient, economical, trouble-free performance. Conseco designs and builds main and auxiliary surface condensers for all types of marine service. Thousands now giving satisfactory service were produced and delivered in record time.

STEAM JET AIR EJECTORS—Twin-element, single and two-stage steam jet air ejectors with inter- and after-condenser, are built to suit vacuum requirements and space limitations. Valves are arranged for independent operation of either element. Furnished integral with surface condenser if desired.

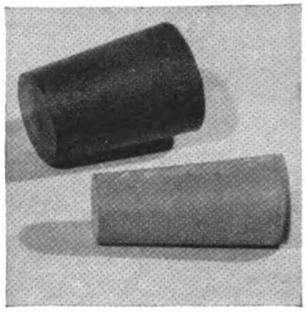
LUBE OIL JACKET WATER COOLERS—Designed and manufactured in types and sizes to suit heat transfer requirements.

AIR AND EROSION ELIMINATOR—Increases tube life at least three times. Proven in long service. Removes entrained air, stops electrolysis and dezincification.

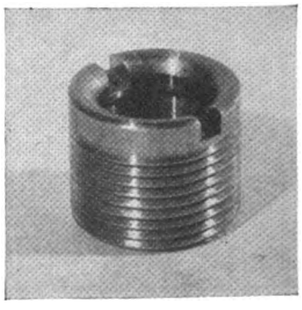
DETECT-A-LEAK—A simple device for finding leaky condenser tubes without filling the condenser with water. Draw vacuum on the shell side, if tube leaks tell-tale will collapse.

CONDENSER FERRULES—Specify metal, inside and outside diameters, diameter and depth of counterbore, over all length, number threads per inch, length threaded portion, width and depth of slot, whether inlet end is plain or bellmouth and size of tube for which required. Prefer to have sketch or sample. To secure accurate thread fit send gauges when possible.

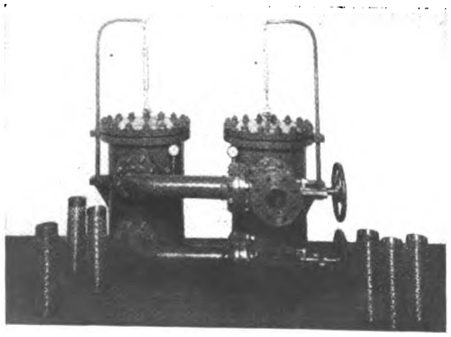
FIBRE PLUGS—Better than wood or metal. Do not contaminate condensate nor damage tube sheet. Secured in place by light tap. Swell in contact with water, insuring perfect tightness. Non-porous and easy to remove.



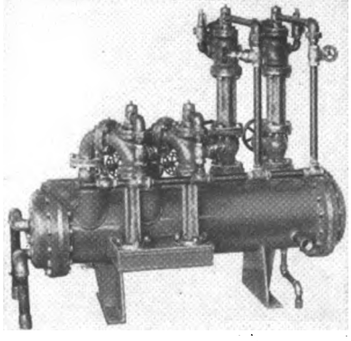
Fibre Plugs



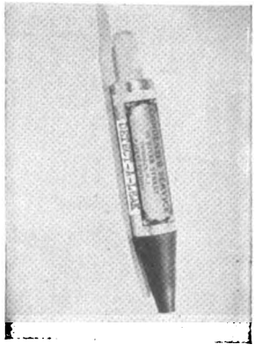
Condenser Ferrules



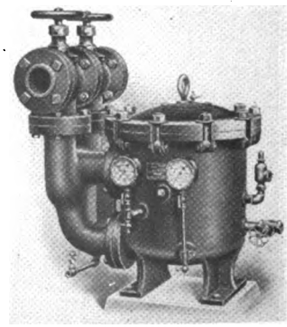
All-Steel Marine Type Boiler Feed Water Filter and Grease Extractor for High-Pressure Service



Twin-Element Two-Stage Air Ejector, with Inter-After Condensers

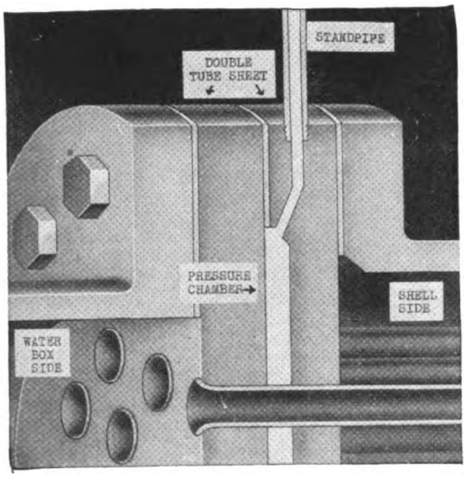


DETECT-A-LEAK Simplifies Finding Leaky Condenser Tubes

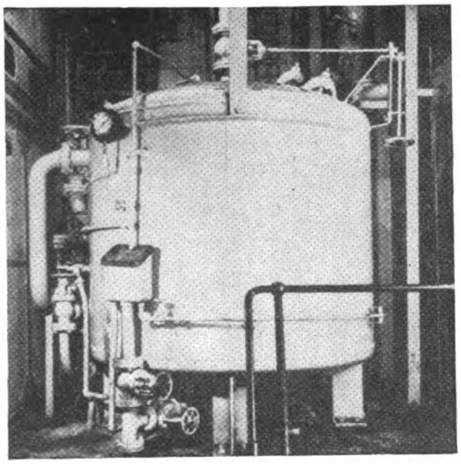


Single-Type Filter and Grease Extractor

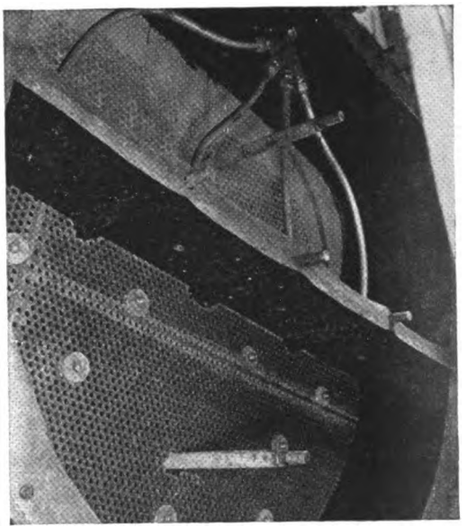
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Double Condenser Tube Sheet



Oil and Water Separator



Air and Erosion Eliminator

DOUBLE TUBE SHEETS — Automatically indicate leakage during operation of condensers and heat exchangers. Permits quick, positive location of leaks and prevents contamination of condensate. Permits continued operation without shutdown. (Patents pending.)

FLOWRITES, METAL TUBE INSERTS—Short, belled-end metal inserts for condenser tube inlet ends. Protects old and new tubes from erosion. Millions sold. Proven successful over 20 years.

WIZARD CONDENSER INJECTOR — Stops condenser leaks almost instantly by injecting cheap, harmless dry sealing compound into circulating water. Efficiency of condenser maintained. Used successfully for years on hundreds of ships' old and new condensers.

OIL AND WATER SEPARATORS—Overboard water will test oil-free to a percentage of 99.99 plus after passing through a Conseco separator. Capacities of from 10 to 50 tons have been made for a long list of ships.

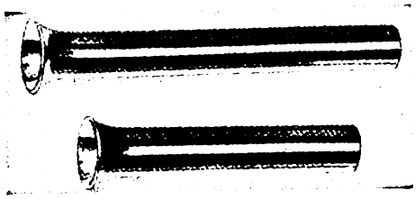
THE REFINER—Pressure leaf type filter, will break the tightest emulsion in the condensate or steam engine, and will remove all emulsified and free oil down to 1/100th part per million.

STANDARD FILTER AND GREASE EXTRACTOR—A terry cloth cartridge type filter for removing free suspended mineral oils and greases. Renewable terry cloth stockings carried in stock.

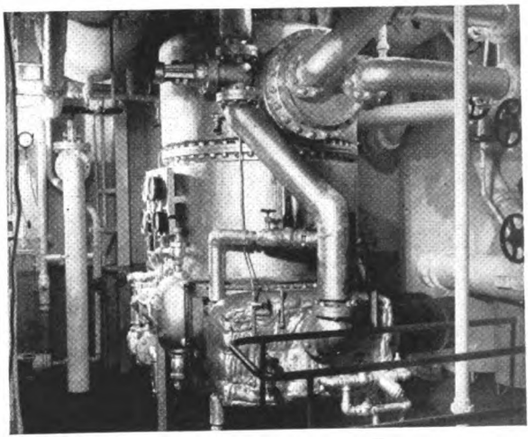
EVAPORATORS, DISTILLERS—Single and multiple effect, low pressure units utilizing exhaust steam at 5 lbs. gauge. Single effect produces 0.9 lbs. fresh water per lb. steam; double effect, 1.65 lbs.; triple effect, 2.45 lbs. water, 1/2 gr. per gal. or less. Single effect units as low as 5 tons capacity; multiple effect units up to 120 tons per day, or to specifications. Employment of the new Conseco patented cycle gives definite operational savings.

STRAINERS—Strainers for bilge, ballast, fresh and circulating water and fuel oil in both single and duplex types. Standard sizes from 3/8 in. to 8 in. Larger to specifications. Tested to 250 lbs. hydrostatic pressure for 125 lbs. working pressure.

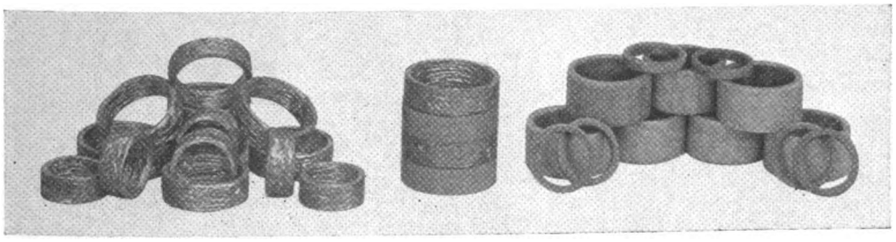
BEVEL GEAR UNIVERSAL JOINTS—Precision-cut, manganese bronze bevel gears with working range from 0 deg. through 135 deg. on vertical centers and 0 deg. to 360 deg. on horizontal centers, for remote hand operation or for centralized control of separated units.



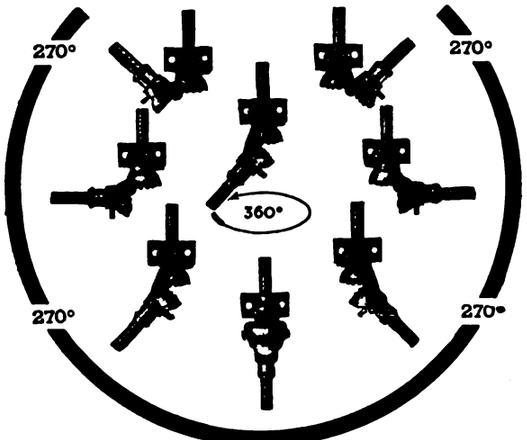
Flowrite Inserts Prevent Condenser Tube End Erosion. Made of same metal as tubes, in lengths to suit condition of tubes.



24-Ton Conseco Low-Pressure Evaporator



Fibre and Metallic Condenser Tube Packing Manufactured to Tolerances Determined by Conseco's Long Experience. All Sizes in Stock. Immediate Shipment.



Conseco Bevel Gear Universal Joints provide a working range 0-135°

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A highly skilled, specially equipped service organization, ready for immediate action anywhere on the continent, backed by engineering and manufacturing facilities producing over 3,000,000 sq. ft. of heat exchangers annually.

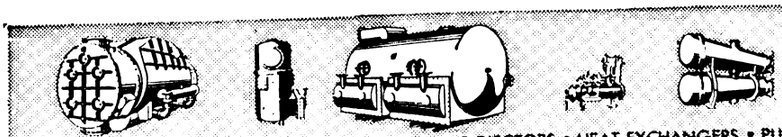
CONDENSER SERVICE & ENGINEERING CO., INC.

95 River Street, Hoboken, N. J.

Phones: New York, Rector 2-9360, Hoboken 3-4425



Wizard Injector



CONDENSERS • LOW PRESSURE EVAPORATORS • AIR EJECTORS • HEAT EXCHANGERS • PUMPS

TUBE CLEANING GUNS AND PLUGS
AIR AND EROSION ELIMINATORS
BEVEL GEAR UNIVERSAL JOINTS
STRAINERS, GREASE EXTRACTORS
WIZARD INJECTORS, FILTERS

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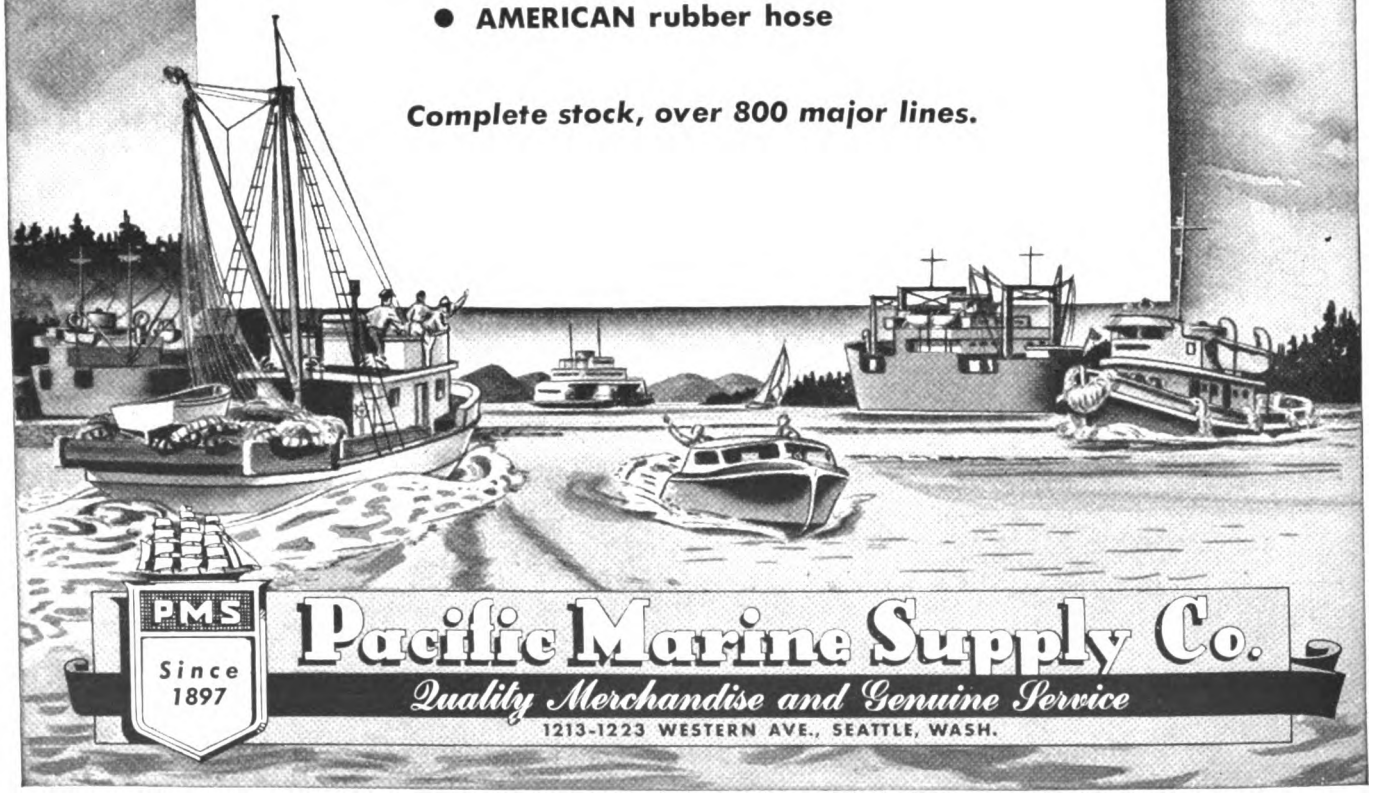
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Efficient dockside delivery to any port in the Puget Sound area. For a single item or a truck load just pick up your phone and call MAin 1573, Seattle. Your order will be filled rapidly and completely.

Because of our many years of experience we have been able to determine and select the finest, proven quality merchandise, including

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- **LUBRIPLATE deck & engine room marine lubricants**
- **PLYMOUTH Shipbrand cordage**
- **C-O-TWO fire equipment**
- **DEVOE & RAYNOLDS paint and varnishes**
- **AMERICAN rubber hose**

Complete stock, over 800 major lines.



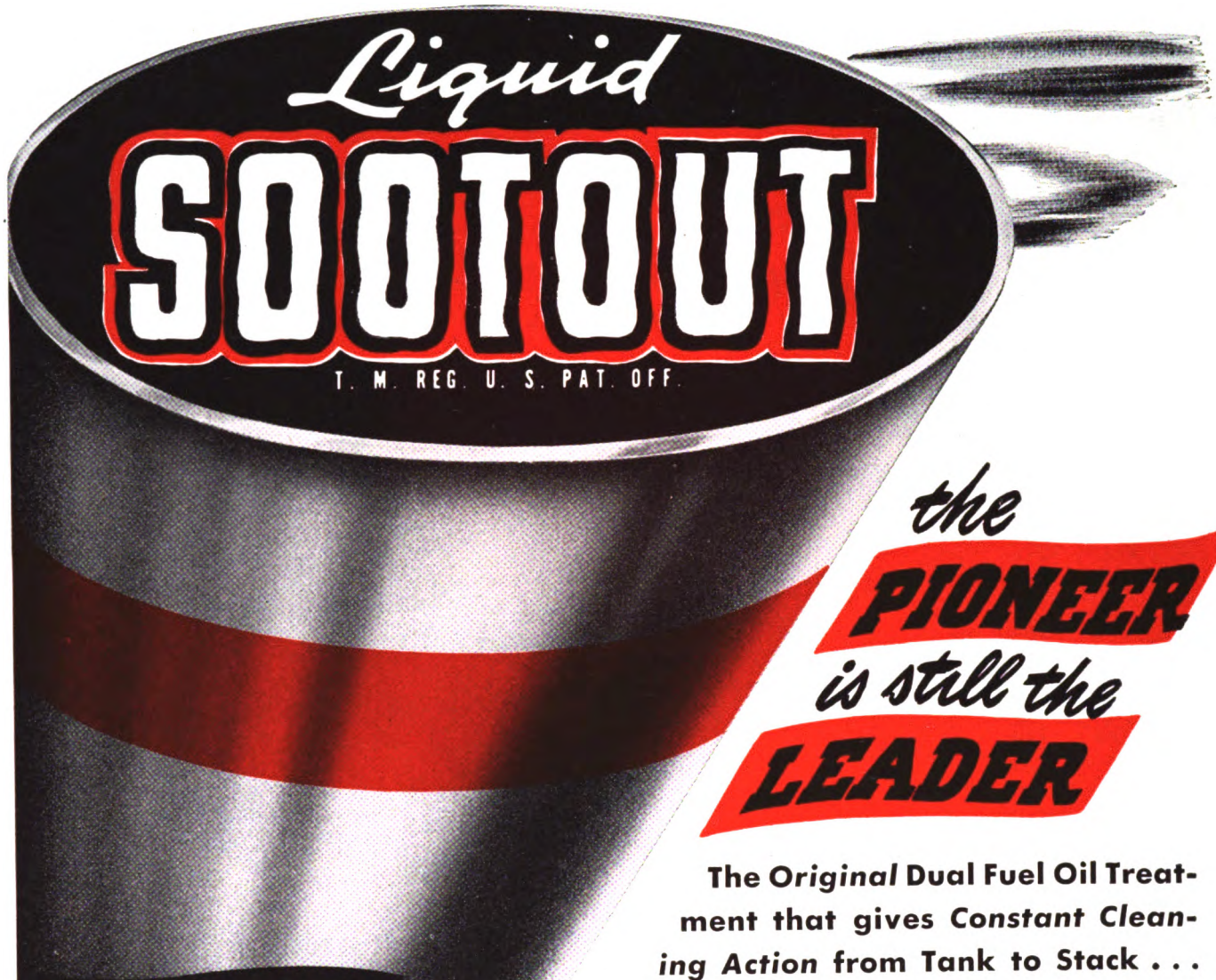
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Pacific Marine Supply Co.

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the PIONEER is still the LEADER

The *Original* Dual Fuel Oil Treatment that gives *Constant Cleaning Action* from Tank to Stack . . .

Liquid SOOTOUT *leadership* has been steadily maintained by *outstandingly superior performance.* It is the modern successor to the old powder type fireside treatments and sludge solvents. Its superiority is recognized generally by marine men *who judge a product on the basis of actual performance.*

Liquid SOOTOUT was the *first* to pioneer in what has become a highly competitive field. *Today,* as in the past, it is providing double cleaning action from tank to stack with *less cost* and *less labor.* It is on this basis of *actual superior performance* that Liquid SOOTOUT has maintained its *leadership over all imitators.*

Double Cleaning Action

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid. When applied to fuel oil in proper proportion, Liquid SOOTOUT disperses condensation and sludge forming elements, and reduces strainer, preheater and nozzle maintenance.

FOR FIRESIDE — Liquid SOOTOUT removes carbon scale and slag in combustion areas. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.



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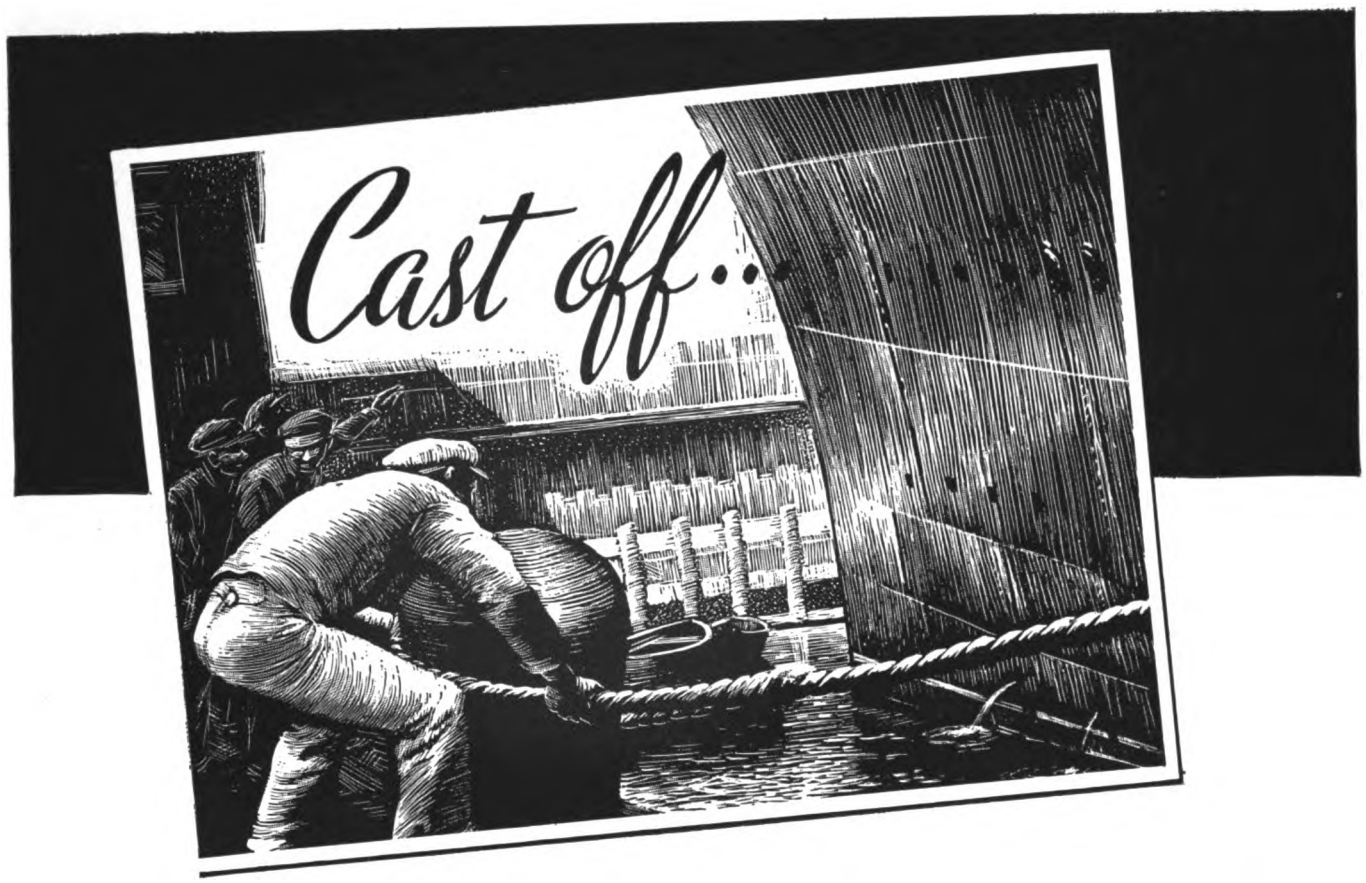
*Baltimore, Maryland, Phelps Packing & Rubber Co.
Baltimore, Maryland, The Terminal Warehouse Co.
*Boston, Massachusetts, Howard C. Burke, Inc.
Boston, Massachusetts, Wiggin Terminals, Inc.
Brooklyn, New York, Lehigh Warehouse Corp. of Brooklyn
*Brooklyn, New York, Monitor Machinery Corp.
*Brownsville, Texas, Coast Iron & Machine Works
*Corpus Christi, Texas, Coast Iron & Machine Works
*Galveston, Texas, Galveston Survey Agency
Houston, Texas, Universal Terminal Warehouse Co.
Jacksonville, Florida, Peninsula Warehouse Co.
Los Angeles, California, J. A. Clark Warehouse Co.
Montreal, Quebec, Frederick M. Irvine, Ltd.
New Orleans, Louisiana, Douglas Public Service Corp.
Norfolk, Virginia, F. H. Gaskins, Co.
Norfolk, Virginia, Southgate Storage Co.
*Philadelphia, Pennsylvania, Marine Sales Co.
Philadelphia, Pennsylvania, Terminal Warehouse Co.
Portland, Maine, Galt Block Warehouse Co.
Portland, Oregon, Colonial Warehouse & Transfer Co.
San Francisco, Calif., San Francisco Warehouse Co.
Seattle, Washington, Eyres Transfer & Warehouse Co.
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*Emergency Stock

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or when laid up for repairs. To keep your ships operating profitably your engineers need dependable mechanical equipment.

The reliable, low-cost operation of Warren Marine Pumps is a long-established fact. For more than half a century, Warren Pumps have been serving dependably and economically on every type of vessel from liners to freighters . . . aircraft carriers to tugs.

Cast off your pumping worries . . . equip or replace with Warren Marine Pumps.

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WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC.

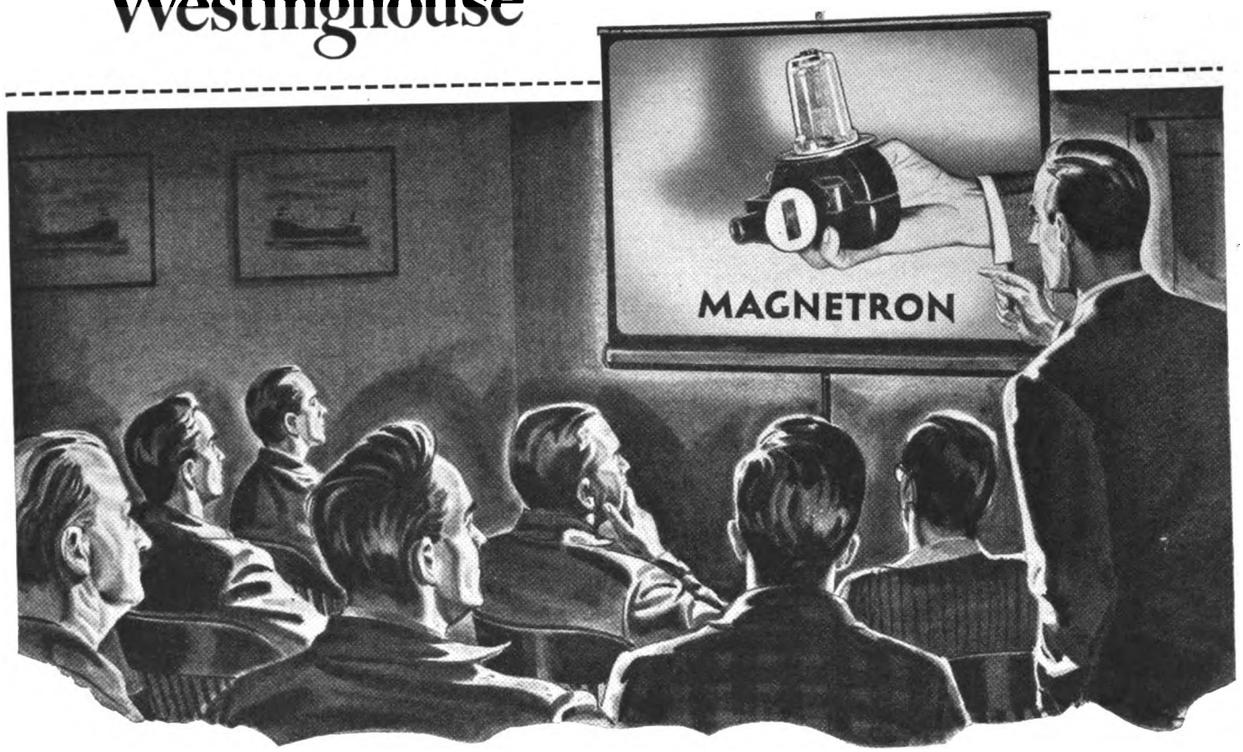
WARREN, MASSACHUSETTS

New York: Warren Engineering Company, 117 Liberty Street, M. L. Katzenstein, President • **San Francisco:** George E. Swett & Company, 256 Mission Street • **New Orleans, Savannah, Houston:** Gulf Engineering Company, Inc. • **Seattle:** R. L. Dyer, 812 Insurance Bldg. • **Los Angeles:** Gil Moore & Company, 711 Gibbons St.

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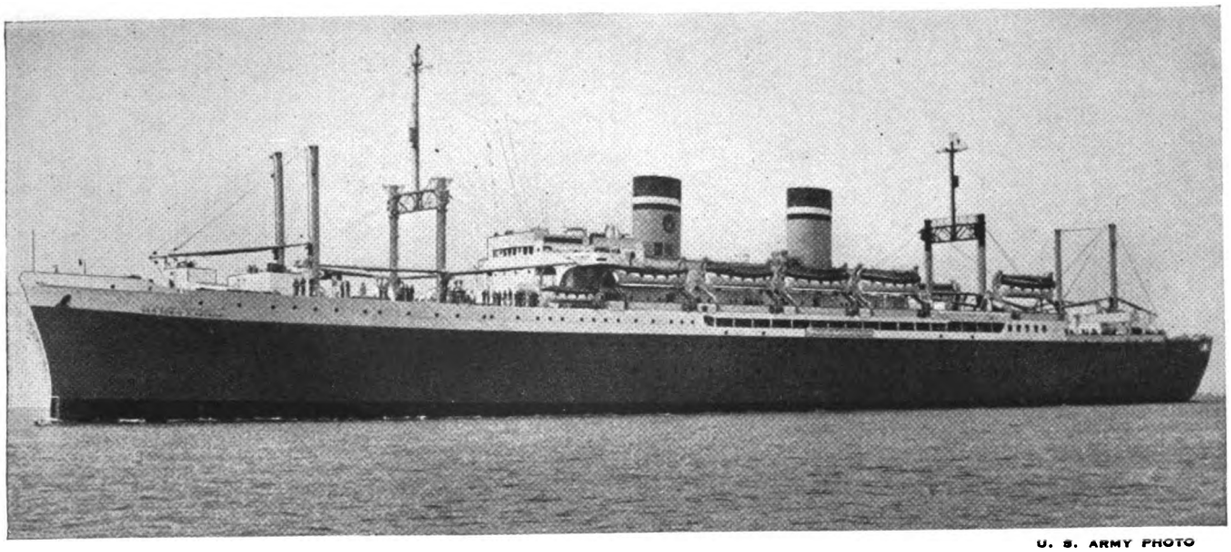
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THE U. S. ARMY TRANSPORTATION CORPS CHOSE WELIN EQUIPMENT – *because of its Dependability*



U. S. ARMY PHOTO

In 1948 WELIN LIFESAVING EQUIPMENT was used when 29 C4 and P2 Army transports as well as troopships were converted into modern globe circling freighters and passenger ships.

Naval architects of the Army Transportation Corps designed this equipment so that each ship was equipped with ten sets of Welin gravity davits. Each set of davits handles a 35 foot hand propelled boat that accommodates 135 persons. Another 30' 8" lifeboat that accommodates 77 persons is nested inside these 35 ft. boats. This assures a maximum of safety with a minimum of cost.

Two Welin crescent type davits handling two 26' x 9' aluminum motor propelled rescue boats, equipped with radio, are also standard equipment on each vessel.

Welin's matched lifesaving equipment is dependable—efficient and light weight. It requires a minimum of maintenance. Its efficient design permits 40 second launchings under the most severe conditions.

If you are planning new construction or to convert ships or replace old type lifesaving equipment, let a Welin engineer think along with you. From the winch brake lever to the keel of every lifeboat, Welin equipment is a masterpiece in engineering and construction.

When specifying lifeboat equipment it will save you money to specify the equipment with the longest life and the lowest maintenance cost—Welin.

In 1948 Welin furnished lifesaving equipment for conversion of 29 C4 and P2 Army transports and troopships.

Each ship NOW equipped with *8 sets of Welin gravity davits handling eight 35 foot, 135 person hand propelled boats nested* with eight 30 foot 8 inch 77 person hand propelled boats.

Two sets of Welin gravity davits handling two 35 foot 135 person hand propelled boats and two sets of Welin Crescent type davits handling two 26 ft. x 9 ft. x 3 ft. 10 in. 43 person aluminum motor propelled radar equipped rescue boats.

This furnishes accommodations for a total of 2052 persons.

TRAVEL AND SHIP BY AMERICAN VESSELS

Welin

WELIN DAVIT AND BOAT

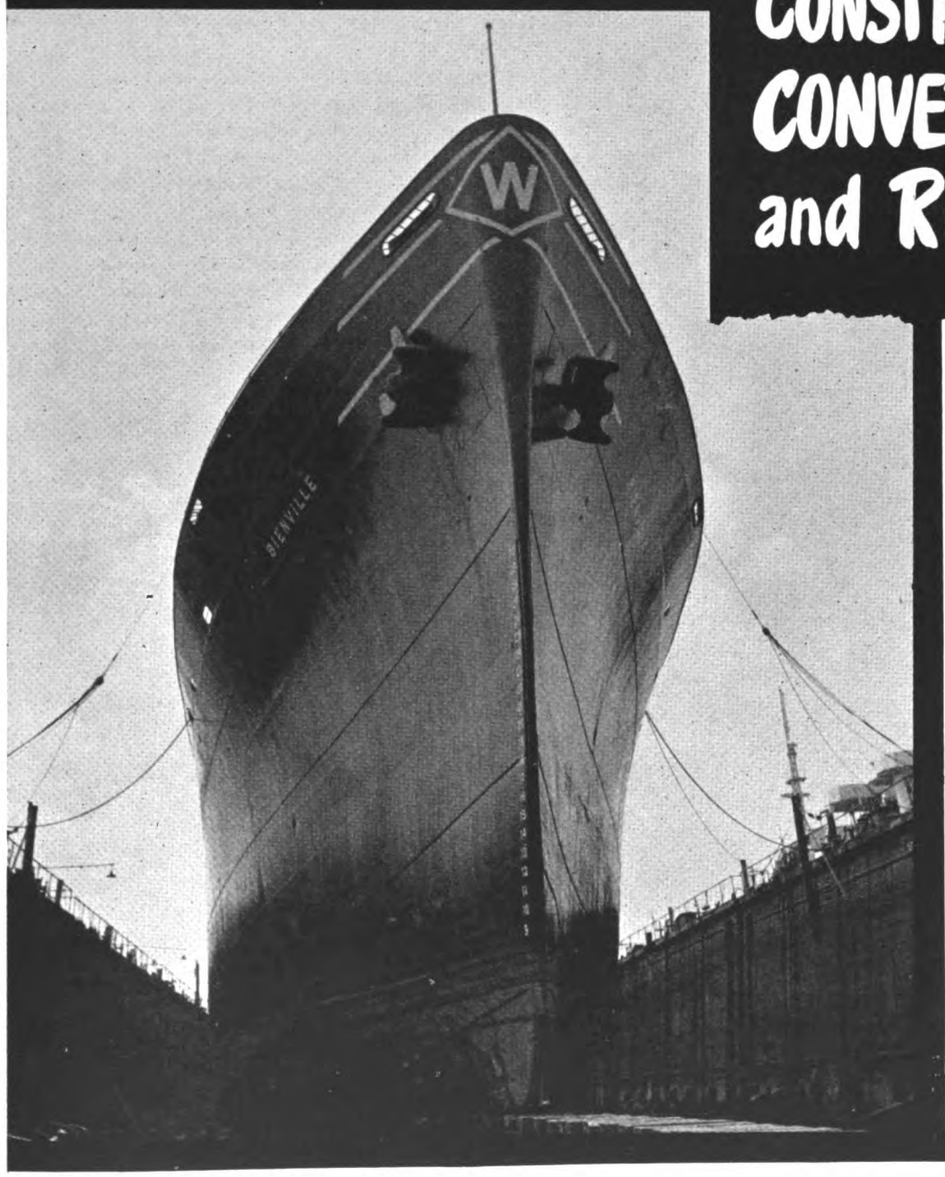
DAVIT AND BOAT DIVISION OF CONTINENTAL COPPER AND STEEL INDUSTRIES, INC.

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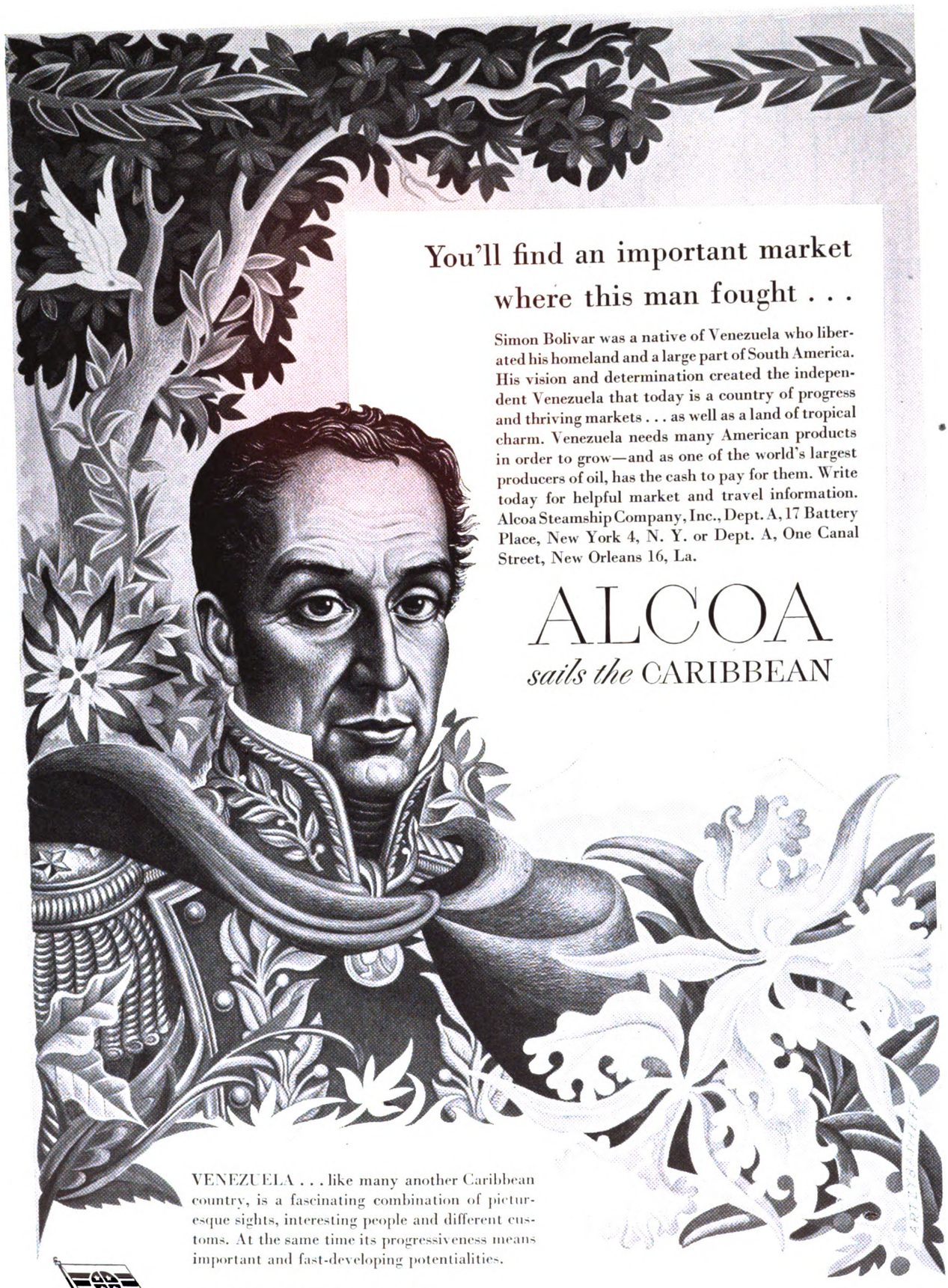
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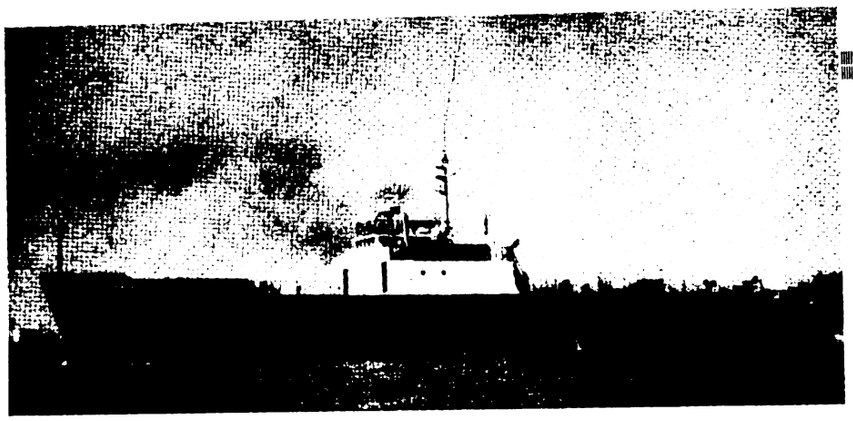
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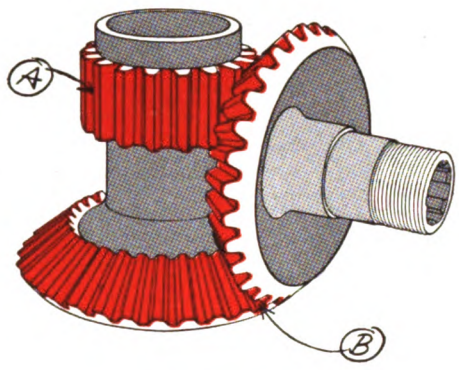
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Case 1104—Keeping Lubricant on Open Drive Gears



OPEN DRIVE GEARS

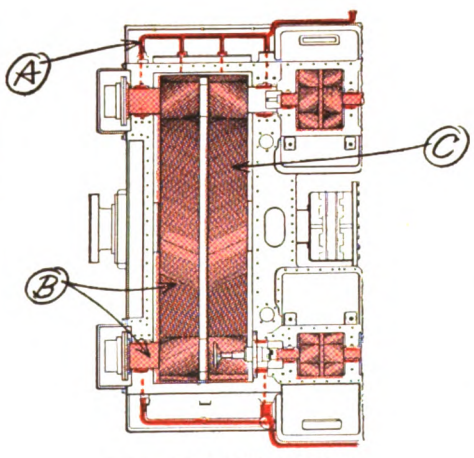
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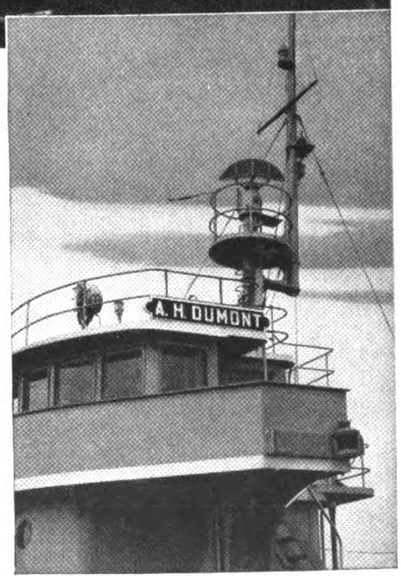
■ With Sperry Radar as his "weather eye," Captain Carlton H. Frost of the tanker A. H. DUMONT delivered 12,500 barrels of oil *on time* through a blinding snow storm that limited visibility on the Hudson River to a quarter of a mile and completely obscured buoys and channel markers.

■ "I never left my radar after the snow started," said Captain Frost... "Because of the unfavorable weather conditions, what could have been a hazardous trip from Perth Amboy to Green Island became only a routine trip... thanks to Sperry Radar."

■ Captain Frost said his experience with Sperry Radar was "all the more remarkable" because he had operated the equipment for only 10 days and this was his first experience under such adverse weather conditions. At times the snow was blowing so hard that the man outside the wheelhouse could hardly see the river banks or other vessels under way.

■ The A. H. DUMONT is one of the many coastwise tankers operated by **Spentonbush Fuel Transport Service, Inc.** equipped with Sperry Radar ...to keep cargos of bulk petroleum moving on time between refinery and storage places... in fog, heavy rain and snow frequently encountered on the coast run from Newfoundland to South America.

■ The experience of Captain Frost and the DUMONT is typical of tanker operations where voyages completed on schedule mean more trips and more efficient operation. Sperry Radar is FCC type approved and offers many advantages for river, Great Lakes or deep sea operations. Our nearest district office will be glad to give you details.



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• View of Todd's Los Angeles Division, conveniently located at the head of the main San Pedro Channel of Los Angeles Harbor.



• Weld inspection by Gamma-Ray Radiography—modern technique in use at Todd yards—records internal cracks or cavities on film.

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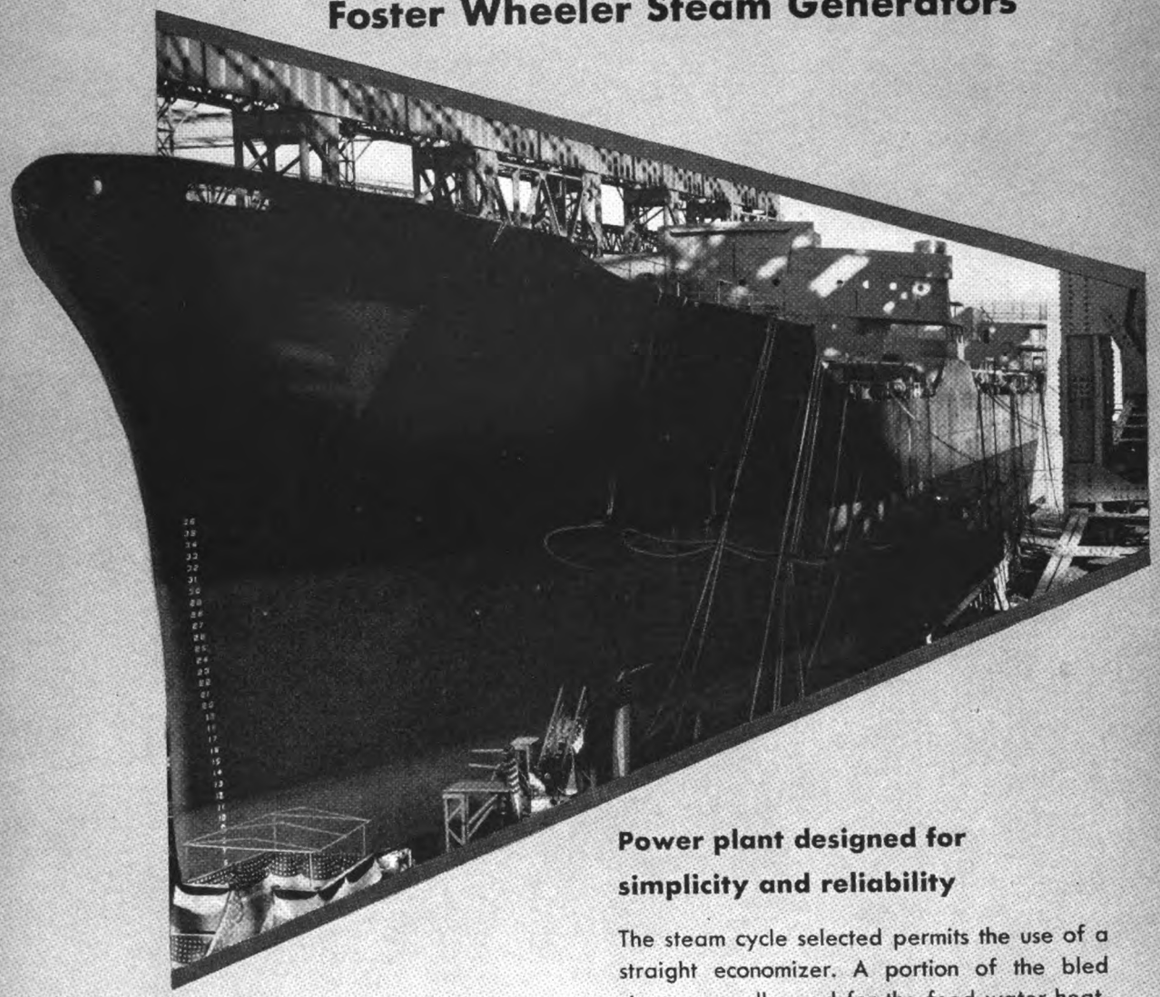
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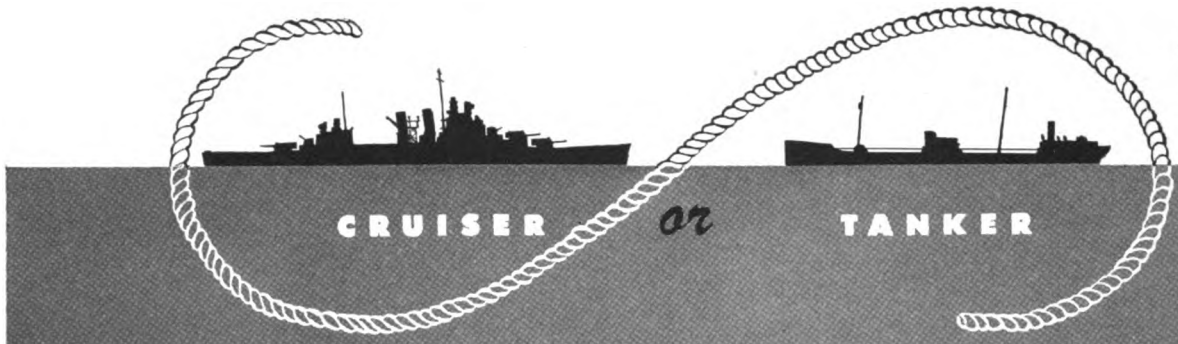
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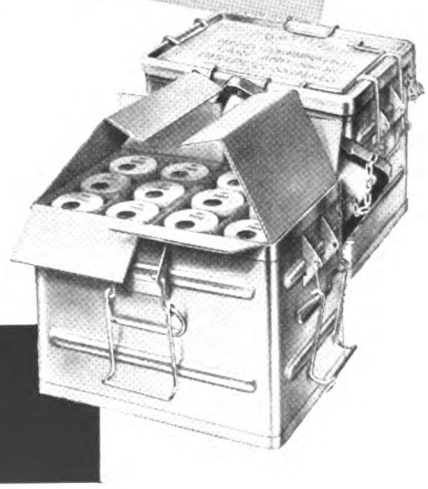
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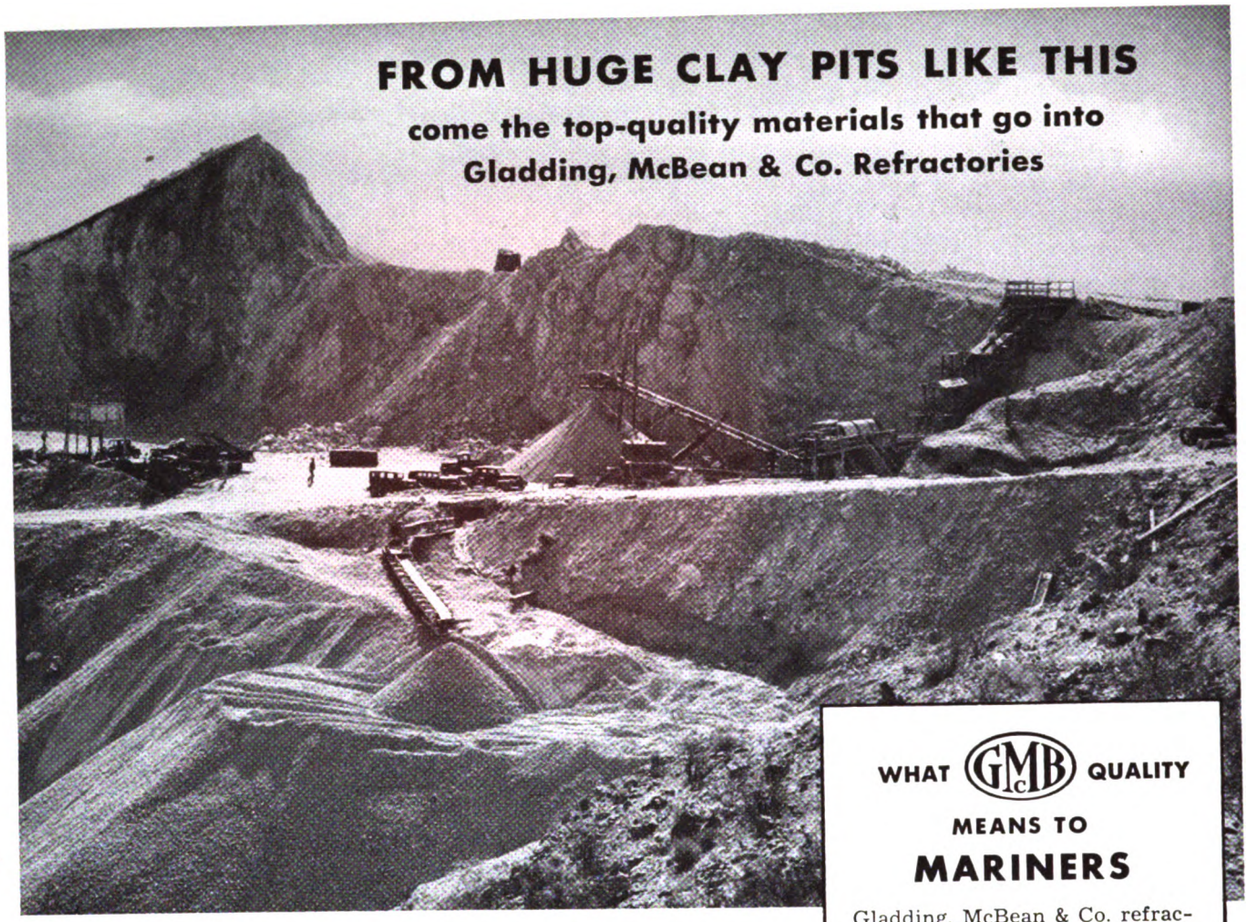
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the LOG
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Review and Yearbook Number

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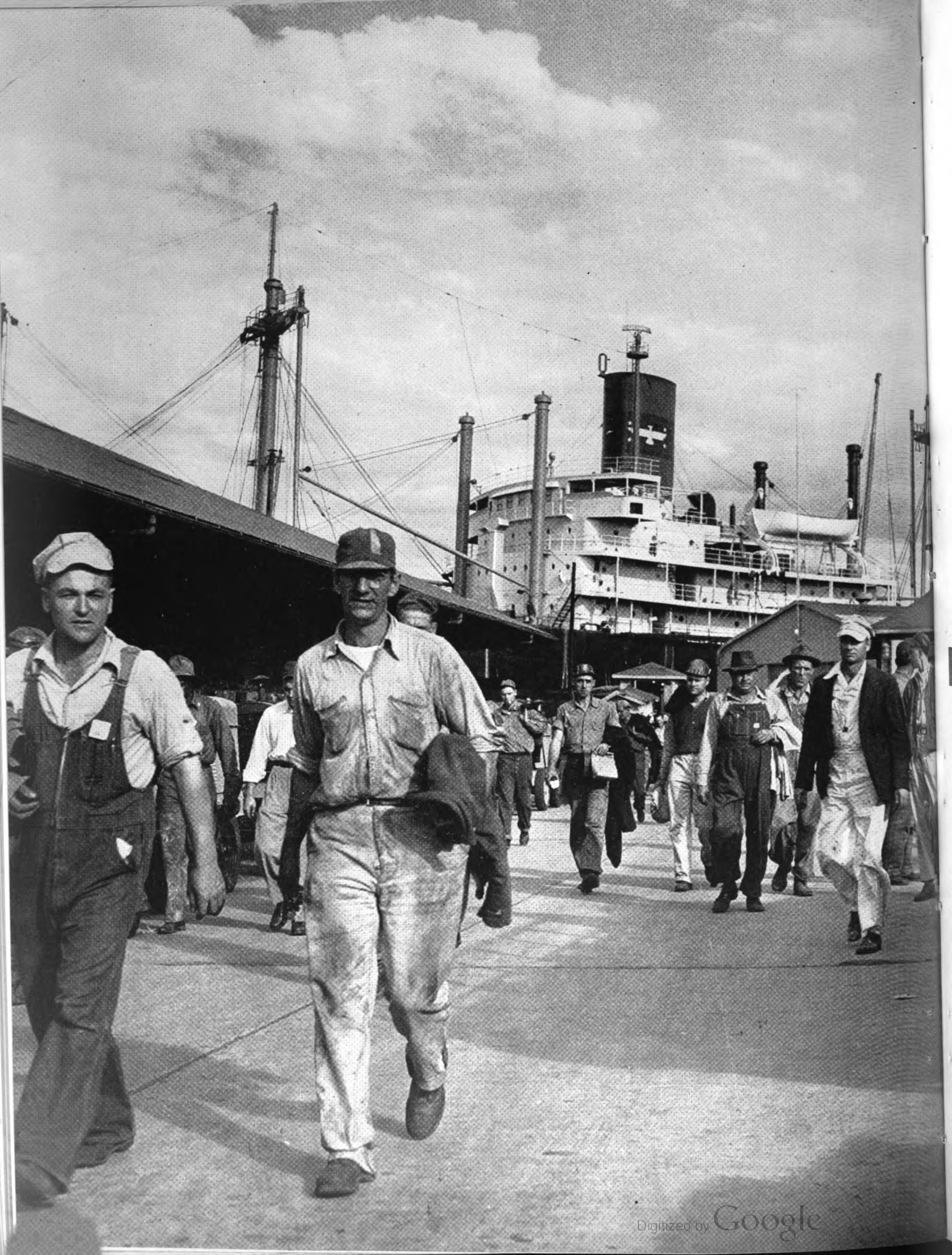
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REPORT ON AMERICA'S MARITIME INDUSTRIES -- 1949

Exclusive LOG surveys of ship operations and shipbuilding, analyzing current business and indicating future trends.

In other sections of The LOG's 1949 Annual Review and Yearbook Number are published exclusive surveys on the disposition of the Maritime Commission's T-2 tanker fleet; the sale and transfer of privately owned American flag merchant vessels since the end of the war; the scrapping of old, obsolete and damaged American ships since the end of hostilities in 1945; a complete analysis of the world's tanker fleets; a report on domestic tanker traffic; an exclusive preview of the world's merchant fleets; an analysis of the reserve fleet; and a report of rule changes of the American Bureau of Shipping.

In this first section are brief summaries and statistics on other phases of the shipping and shipbuilding industries such as employment, chartering activity, ship sales, liner traffic, overseas trade, and statistics on the U.S. Merchant Marine. All of these factors affect the shipping and shipbuilding industries, an analysis of which makes possible to some extent a measure of future operations.

Most of the exclusive surveys which appear in this Annual Review and Yearbook Number are designed to be continued throughout the years. The exception to this will be found in the case of the sale and transfer of Maritime Commission T-2 tankers. Since all of these tankers have now been disposed of, the survey in this 1949 issue completes this picture.

Because of the continuing nature of these surveys and statistics, and because The LOG's supply of Yearbooks is quickly exhausted, it is suggested that you keep previous Yearbooks on file for ready reference.

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A LOG SURVEY

REPORT ON VESSEL BAREBOAT CHARTERING

From the accompanying chart and table it will be noted that since July, 1947, the number of warbuilt vessels bareboat chartered to American shipping interests by the Maritime Commission under the authority of the Merchant Ship Sales Act of 1946 has declined month by month so that on January 1, 1949, the total had dropped to a postwar low of 354. At the same time the number of shipping companies chartering these vessels had been reduced in a two year period from 84 to 54 on May 1, 1949. Since the first of this year, however, there has been some increase in the demand for tonnage on a bareboat charter basis, principally for the bulk shipment trades, resulting in an additional 33 vessels, or 387 total, being out on charter on May 1. It would seem, based on present prospects, that the number of vessels the Maritime Commission can bareboat charter through the balance of 1949 will probably fluctuate between 350 and 400 each month. However, the authority of the Commission to charter vessels expires on June 30, 1949, but a bill has been presented in Congress which would extend this authority until June 30, 1950, and the prospects of its being passed would seem to be excellent.

The type of vessel in greatest demand at all times for bareboat charter has been the Liberty cargo ships, capable of handling large deadweight loads and bulk commodities. While the ability of the vessel to function as a bulk carrier was thoroughly demonstrated during the war, early postwar predictions condemned the vessel as unsuitable for world trading. However, American shipping interests have operated at times more than 1,000 of the standard Liberty cargo ships under bareboat charter, and this is the type of ship the government's shipping agency has succeeded in selling more of than any other type, with foreign interests purchasing 589 and 94 being sold for operation under the flag of the United States. While at one time there were more than 265 Victory ships being operated under bareboat charter, little more than 25 percent of that total, or 72, are now chartered.

More than 1,240 of these bareboat chartered ships were utilized at one time in the foreign trade of the United States by American shipping interests, but on May 1, 1949, only 322 Maritime Commission chartered vessels were so employed, the total showing a consistent decline month by month. One of the reasons for this is the declining volume of the imports and exports of the United States, together with increased foreign flag vessel competition. Another reason is the fact that American ship owners have reduced the number of vessels they found it necessary to charter as they were able to purchase and put into service their own vessels of their newly assembled postwar fleets. On January 1, 1949, American shipping interests owned under American registry a total of 639 cargo ships of 4,401,000 gross tons and 6,418,000 deadweight tons, together with 47 combination passenger and cargo ships of 411,000 gross tons and 341,000 deadweight tons, and 490 tankers of 4,501,000 gross tons and 7,206,000 deadweight tons. At that time the Maritime Commission owned 2,234 vessels of 16,023,000 gross tons and 22,498,000 deadweight tons.

As of December 31, 1948, there were 1,415 actively employed American flag privately owned and chartered vessels, including 907 cargo ships, 43 passenger ships, and 465 tankers. Of these, 761 were cargo ships utilized in foreign trade and 146 were cargo ships operating in the domestic trade. Of these 907 actively employed cargo ships, 63 percent, or 575, were privately owned and the balance of 332 were Maritime Commission owned bareboat chartered tonnage. Of the 146 vessels utilized in the domestic trades, only 56 were operating coastwise, 43 intercoastal, and 47 on noncontiguous routes. All but 40 of these domestically employed vessels were privately owned, the 40 being chartered from the Maritime Commission.

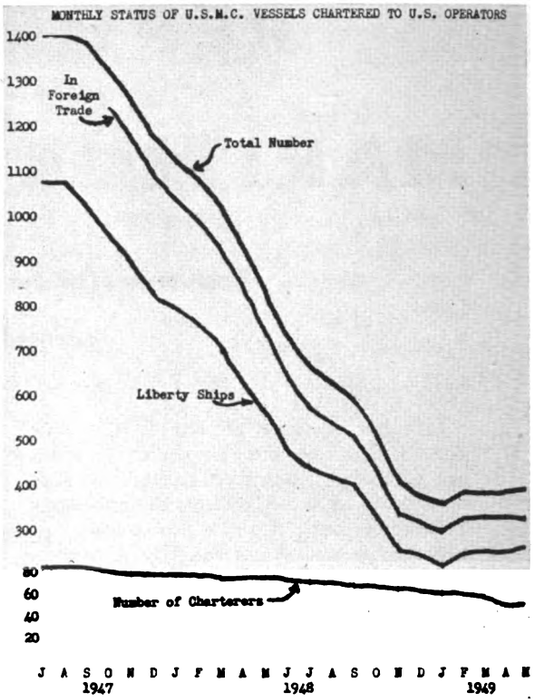
The Maritime Commission has received from charterers of its vessels in the period September 1, 1946 to March 31, 1949, a total of $285,415,470, an amount equivalent to the ship sales price of about 524 Liberty type vessels. Currently the Commission is receiving $2,853,775 a month for the greatly reduced number of vessels out on charter—about 360. Assuming that the requirements for the use of these vessels

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MONTHLY STATUS OF U.S. MARITIME COMMISSION OWNED WAR-BUILT MERCHANT VESSELS BAREBOAT CHARTERED TO AMERICAN SHIPPING INTERESTS

Month	Total	Liberty Type	Victory Type	Other Types	In Foreign Trade	In Coastwise, Alaskan, Philippine Trade	No. of Charterers
July 1, 1947...	1405	1073	265	67	N.A.	N.A.	84
Aug. 1, 1947...	1404	1079	259	66	N.A.	N.A.	84
Sept. 1, 1947...	1389	1028	244	177	N.A.	N.A.	84
Oct. 1, 1947...	1320	954	234	132	1242	78	80
Nov. 1, 1947...	1263	898	224	141	1179	84	78
Dec. 1, 1947...	1174	822	220	132	1087	87	78
Jan. 1, 1948...	1128	790	202	136	1035	93	79
Feb. 1, 1948...	1080	759	193	128	986	94	77
Mar. 1, 1948...	1018	707	183	128	925	93	75
Apr. 1, 1948...	928	636	166	126	838	90	75
May 1, 1948...	833	560	152	121	744	89	75
June 1, 1948...	724	472	137	115	632	92	73
July 1, 1948...	660	433	120	107	569	91	71
Aug. 1, 1948...	620	415	111	94	536	84	70
Sept. 1, 1948...	586	398	99	89	505	81	68
Oct. 1, 1948....	507	333	93	81	433	74	68
Nov. 1, 1948...	401	255	80	66	332	69	65
Dec. 1, 1948...	373	240	75	58	313	60	63
Jan. 1, 1949...	354	228	67	59	299	55	60
Feb. 1, 1949...	380	244	71	65	322	58	60
Mar. 1, 1949...	377	244	72	61	321	56	57
Apr. 1, 1949...	380	244	74	62	323	57	54
May 1, 1949...	387	255	72	60	322	65	54

N.A.—Not available.



will remain the same for the balance of the year, the estimated charter hire for the rest of the year is approximately $24,000,000.

The continued bareboat chartering of Maritime Commission owned vessels will be necessary in the future in order to maintain the availability of sufficient ships to support American flag vessel 50 percent participation in the transportation of E.C.A. cargoes and other government programs. Any restrictions or decrease in the number of government owned ships available for charter would only result in the advent of foreign flag tonnage in the trade along with a possible increase in freight rates. However, the Commission very properly is not chartering any of its vessels so long as there is a privately owned American flag vessel in the market awaiting business.

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REPORT ON U. S. SHIPYARD EMPLOYMENT

In the last two and one-half years a considerable decline has occurred in the number employed in the shipbuilding and repair industry of the United States, as will be noted from the accompanying chart and table. In January, 1947, there were 242,400 employed in the industry, but the total has been reduced month by month so that in February, 1949, there were only 179,100 on the payroll, including both Navy yards and private yards. This represents a drop of about 30 percent and many valuable men skilled in the trade have been forced to seek employment in other industries. Employment in the Navy yards, however, has been fairly constant and, in fact, has increased somewhat in recent months as result of the orders placed last year for a number of new Navy combatant ships.

The total employed in privately owned shipyards dropped from 152,900 in January, 1947, to 89,000 in January, 1949, a decline of more than 40 percent in two years. It is expected there will be a slight increase in employment in the private yards during the first six months of the year, holding constant then for the balance of this year.

Employment in the yards on inland rivers has held at a fairly constant rate, but a drop of almost 50 percent has been experienced in the Great Lakes shipyards. Pacific Coast yards have been hard hit, the employment roll dropping from 67,300 in January, 1947, to 46,600 in February, 1949, a decline of almost 40 percent. Gulf yards have had a decline of over 50 percent, dropping in the period mentioned from 28,000 to 13,500 men. South Atlantic shipyards have experienced practically no decline at all in the past two years, employing 30,300 in January, 1947, and 29,100 in January, 1949. However, employment in North Atlantic plants has fluctuated considerably, due to strikes and other unsettling factors, there being 107,500 on the payroll in January, 1947, and 83,900 in February, 1949.

No considerable decline in employment from the present levels is in prospect in the private shipyards of the United States for the balance of this year and continuing into the early part of 1950. However, unless additional orders for new ships are forthcoming, the indications are that there will be some curtailment in employment by the middle of 1950, with the consequent loss of skilled craftsmen from an industry which rates as one of the top national defense industries and which during the war for two years running used more steel than any other industry.

Employment in the eleven naval shipyards in the United States and Hawaii will be reduced by nearly 10,000 in the fiscal year beginning July 1, the Navy has announced. Total employment in the yards on March 31 was estimated at 96,425, compared with an average of 86,500 expected for the year 1949-50, Navy figures showed. The shipyard at New York, although the largest, with a March 31 employment roll of 12,280, will be cut the least. Employment there is expected to average about 12,250 in the next fiscal year. By July 1 the yard probably will be employing 12,300.

The Navy said the coming reduction in personnel was forced by wage increases granted during the past year and rising costs of materials. It was further explained that, in effect, there would also be a drop in the amount of funds available from wartime shipbuilding appropriations to make improvements on newly completed ships. These improvements, the Navy said, could be made out of those appropriations for only a limited time after completion of the ship. Most of the vessels completed during the war were

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EMPLOYMENT OF UNITED STATES FLAG SEAGOING MERCHANT FLEET AS OF DECEMBER 31, 1948
VESSELS 1,000 GROSS TONS AND OVER

(Excludes Vessels on the Inland Waterways, Great Lakes and Those Owned by the U.S. Army and Navy; Maritime Commission-Owned Vessels Directly Chartered or Loaned to U.S. Army or Navy and Special Types such as Cable Ships, Tugs, etc.)

(Tonnage in Thousands)

Status and Area of Employment	TOTAL			Combination Passenger & Cargo			Freighters			Tankers		
	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons
GRAND TOTAL	3,410	25,332	36,462	79	778	605	2,812	19,912	28,440	519	4,646	7,421
Active Vessels	1,415	11,247	16,629	43	452	369	907	6,474	9,331	465	4,325	6,932
Foreign Trade	986	7,767	11,215	38	413	343	761	5,502	7,898	187	1,856	2,976
Nearby Foreign (a)	164	1,234	1,705	17(a)	140	114	80	467	590	67	628	1,000
Overseas Foreign	742	5,755	8,281	21	273	229	668	4,940	7,176	53	542	876
Foreign-Foreign	80	779	1,229	..	...	...	13	95	132	67	686	1,100
Domestic Trade	429	3,480	5,414	5	39	26	146	972	1,433	278	2,469	3,956
Coastwise	325	2,705	4,327	..	...	...	56	309	483	269	2,396	3,844
Intercoastal	45	347	502	..	...	...	43	329	475	2	18	27
Noncontiguous	59	428	585	5	39	26	47	334	475	7	55	85
Inactive Vessels	1,995	14,085	19,833	36	326	236	1,905	13,438	19,109	54	321	489
Temporarily Inactive	149	1,015	1,349	16	159	106	104	649	923	29	207	321
U.S.M.C. Reserve Fleet	1,846	13,070	18,484	20	167	130	1,801	12,789	18,186	25	114	168
Total U.S.M.C. Owned	2,234	16,023	22,498	32	367	264	2,173	15,511	22,020	29	145	215
Active Vessels	341	2,584	3,561	9	149	107	332	2,435	3,454	...	.....	.....
Foreign Trade	301	2,280	3,128	9	149	107	292	2,131	3,021	...	.....	.....
Nearby Foreign (a)	14	72	76	3(a)	30	20	11	42	56	...	.....	.....
Overseas Foreign	277	2,134	2,954	6	119	87	271	2,016	2,867	...	.....	.....
Foreign-Foreign	10	74	98	..	...	...	10	74	98	...	.....	.....
Domestic Trade	40	304	432	..	...	...	40	304	432	...	.....	.....
Coastwise	5	36	54	..	...	...	5	36	54	...	.....	.....
Intercoastal	30	238	337	..	...	...	30	238	337	...	.....	.....
Noncontiguous	5	30	42	..	...	...	5	30	42	...	.....	.....
Inactive Vessels	1,893	13,439	18,938	23	218	157	1,841	13,076	18,566	29	145	215
Temporarily Inactive	47	369	453	3	51	27	40	287	380	4	31	47
U.S.M.C. Reserve Fleet	1,846	13,070	18,484	20	167	130	1,801	12,789	18,186	25	114	168
Total Privately Owned	1,176	9,310	13,964	47	411	341	639	4,401	6,418	490	4,501	7,206
Active Vessels	1,074	8,664	13,068	34	303	262	575	4,039	5,875	465	4,325	6,932
Foreign Trade	685	5,487	8,086	29	264	236	469	3,371	4,875	187	1,856	2,976
Nearby Foreign	150	1,162	1,629	14	110	94	69	425	534	67	628	1,000
Overseas Foreign	465	3,620	5,327	15	154	142	397	2,924	4,309	53	542	876
Foreign-Foreign	70	705	1,131	..	...	...	3	22	32	67	686	1,100
Domestic Trade	389	3,177	4,982	5	39	26	106	668	1,000	278	2,469	3,956
Coastwise	320	2,670	4,273	..	...	...	51	273	429	269	2,396	3,844
Intercoastal	15	109	165	..	...	...	13	91	138	2	18	27
Noncontiguous	54	398	543	5	39	26	42	304	433	7	55	85
Inactive Vessels	102	646	896	13	108	79	64	362	543	25	176	274
Temporarily Inactive	102	646	896	13	108	79	64	362	543	25	176	274

Note: Tonnage figures are not additive since the detailed figures have been rounded to the nearest thousand.
(a) Includes 3 combination passenger and cargo vessels totaling 30,000 gross and 20,000 deadweight tonnage owned by Panama Line.
Source: U.S. Maritime Commission, Research Division

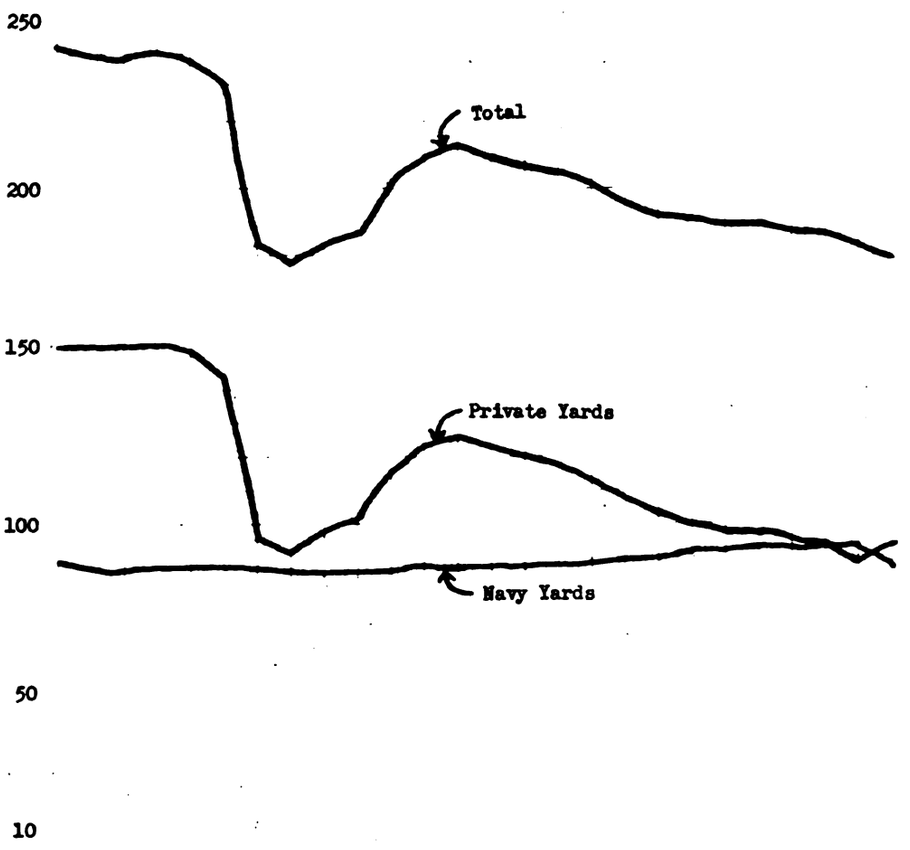
now at that stage, with the result that the limitation was due to expire.

Following are the prospective employment figures for all the naval yards, with figures showing present employment:

Yard	March 31 1949	July 1 1949	Average Year Ending June 30, 1950
EAST COAST			
Portsmouth, N. H.	5,507	5,300	5,350
Boston	9,926	8,600	8,200
New York	12,280	12,300	12,250
Philadelphia	10,298	9,650	8,900
Norfolk, Va.	10,439	9,500	9,100
Charleston, S. C.	7,041	6,400	6,400
WEST COAST			
Long Beach, Cal.	7,541	5,900	5,900
San Francisco	7,112	6,900	6,600
Mare Island, Cal.	10,650	9,750	9,300
Puget Sound, Wash.	9,502	9,000	9,000
Pearl Harbor	6,219	5,800	5,500
Totals	96,425	89,100	86,500

It is of interest to note that the average straight time hourly earnings of labor in the major Atlantic Coast private shipyards has advanced from 84.3 cents in January, 1941, to $1.631 in January, 1949, the index number jumping from 100 to 193.4. This, of course, is the main reason why American ships cost forty to fifty percent more than most foreign built ships, but with the high standard of living in the United States little can be done in the direction of cutting costs.

EMPLOYMENT IN U.S. NAVY YARDS AND PRIVATE SHIPYARDS
(In Thousands)



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AVERAGE STRAIGHT TIME HOURLY EARNINGS IN THE MAJOR ATLANTIC COAST PRIVATE SHIPYARDS

Date	Average Hourly Earnings (Excluding Extra Overtime and Other Premium Wages)	Index Number
Jan., 1941	.843	100.0
July, 1941	.949	112.5
Jan., 1942	.949	112.6
July, 1942	1.040	123.4
Jan., 1943	1.073	127.3
July, 1943	1.117	132.4
Jan., 1944	1.177	139.6
July, 1944	1.208	143.3
Jan., 1945	1.223	145.0
July, 1945	1.265	150.0
Jan., 1946	1.438	170.5
July, 1946	1.448	171.8
Jan., 1947	1.400	166.0
July, 1947	N. A.	N. A.
Oct., 1947	1.454	172.5
Jan., 1948	1.530	181.4
July, 1948	1.568	186.0
Jan., 1949	1.631	193.4

Note: This series is designed for use only in connection with labor escalator clauses in certain contracts with the U. S. Dept. of the Navy.

N. A.—Not available.

Source: U. S. Department of Labor, Bureau of Labor Statistics.

EMPLOYMENT IN UNITED STATES NAVY YARDS AND PRIVATE SHIPYARDS
(In Thousands)

Month	Grand Total	Navy Yards(a)	Private Yards	North Atlantic	South Atlantic	Gulf	Pacific	Great Lakes	Inland
1947									
January	242.4	89.5	152.9	107.5	30.3	28.0	67.3	6.3	3.0
February	239.8	87.2	152.6	105.6	30.5	29.0	65.6	6.3	2.8
March	239.2	86.6	152.6	104.2	30.7	30.9	64.4	6.3	2.7
April	240.5	87.3	153.2	106.9	29.7	31.2	64.4	5.7	2.6
May	238.2	87.1	151.1	106.8	30.6	29.9	62.9	5.3	2.7
June	230.2	86.5	143.7	105.8	29.4	29.4	59.8	3.3	2.5
July	182.1	86.2	*95.8	67.7	29.6	24.8	54.1	3.2	2.6
August	178.0	86.2	*91.8	66.8	30.0	23.2	52.3	2.9	2.8
September	183.1	85.5	*97.6	70.8	28.8	25.8	51.9	2.9	2.9
October	187.0	85.7	101.3	76.4	28.3	25.5	50.8	2.9	3.1
November	201.5	85.6	115.9	89.4	28.2	24.4	53.3	2.9	3.1
December	209.9	86.3	123.6	94.4	28.3	25.4	55.1	3.4	3.3
1948									
January	212.6	87.0	125.6	95.7	28.9	25.1	55.7	3.9	3.3
February	209.3	87.2	122.1	96.2	29.1	23.9	52.6	4.1	3.4
March	207.5	87.5	120.0	97.3	28.5	22.6	51.7	4.1	3.3
April	205.3	87.8	117.5	100.4	29.0	19.4	49.5	3.7	3.3
May	200.7	88.3	112.4	99.4	28.8	18.0	48.0	3.5	3.0
June	195.4	88.6	106.8	95.9	28.9	17.2	47.1	3.1	3.0
July	191.9	89.5	102.5	93.6	28.9	16.9	46.7	2.9	2.9
August	190.9	91.1	99.8	95.3	29.2	14.1	46.5	3.0	2.8
September	189.3	91.8	97.5	94.2	29.2	12.3	47.7	2.9	3.0
October	189.5	92.1	97.4	93.0	29.0	12.4	49.1	3.0	3.0
November	187.6	92.6	95.0	92.2	29.4	12.9	47.0	3.1	2.9
December	186.3	92.6	93.7	89.4	29.5	13.0	47.9	3.7	2.8
1949									
January	182.1	93.1	89.0	85.3	29.1	13.2	47.6	4.1	2.8
February	179.1	86.5	92.6	83.9	28.3	13.5	46.6	4.1	2.7

* Labor strike.
(a) Includes all Navy Yards constructing or repairing ships, and the Curtis Bay, Md., Coast Guard, yard.
Source: U. S. Department of Labor, Bureau of Labor Statistics.

REPORT ON U.S.M.C. SHIP SALES ACTIVITY

Title to the first of the warbuilt ships sold by the Maritime Commission under the authority of the Merchant Ship Sales Act of 1946 was transferred to the new owner in August, 1946. While the program was rather slow in getting started in the first few months, only 301 vessels being turned over to purchasers during 1946, in 1947, however, a total of 1,129 ships changed hands, an average of more than three per day. The number sold in 1948 dropped considerably from the 1947 totals, due to a decline in the demand for tonnage and the fact that the authority of the Maritime Commission to sell warbuilt ships to foreign interests expired on February 28, 1948. As a result only 326 ships were transferred to new owners in that year. The Commission can now only sell these warbuilt ships to American citizens and its authority to do so expires on June 30, 1949. There is pending before Congress a bill which would extend to June 30, 1950, the authority of the Commission to charter and sell ships to American citizens. However, if its authority to sell and charter is not extended beyond June 30, 1949, the warbuilt ships in the laid up fleet at that time must, in accordance with the terms of the Merchant Ship Sales Act of 1946, be immobilized, going into permanent lay-up status.

Up to April 1, 1949, the Maritime Commission had sold to American and foreign shipping interests a total of 1,769 vessels of 13,156,533 gross tons and 19,640,794 deadweight tons, with propelling machinery aggregating 8,120,598 horespower. This sales program has returned a gross of over $1,600,000,000 to the United States Treasury, although mortgages against many of these ships are still outstanding approaching more than one-third of this sum. During the past six months the sale of these vessels has averaged only about five per month and there is no indication there will be any increase in this rate in the future as American shipping interests have practically completed the assembling of their postwar cargo ship fleets.

Sold for American flag operation were 656 vessels of 5,233,225 gross tons and 7,862,888 deadweight tons, with propelling machinery aggregating 3,918,830 horsepower. Vessels sold to foreign flags totaled 1,113 of 7,923,308 gross tons and 11,777,906 deadweight tons, with propulsion machinery of 4,201,768 horsepower, or a fleet larger than that which existed under the American flag before the war. A total of 470 tankers have been sold to American and foreign interests, these representing over 4,500,000 gross tons and 7,250,000 deadweight tons. Cargo ships sold total 1,274 of 8,456,067 gross tons and 12,318,666 deadweight tons. Included in the latter are 706 Liberty and 126 Victory types. More than 1,500 Liberty ships are still owned by the Maritime Commission.

War-Built Vessels Sold by United States Maritime Commission Under Terms of Merchant Ship Sales Act of 1946
August 1st, 1946 to March 31st, 1949
Number, Tonnage and Horsepower of Vessels Sold Each Month

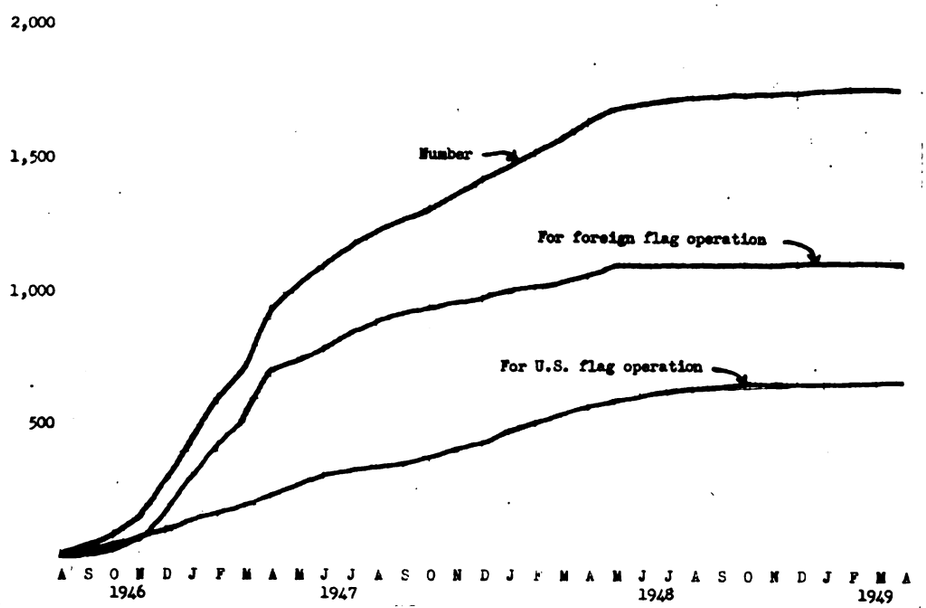
Month	No.	Gross Tons	Deadweight Tons	Horsepower
August-December, 1946	301	2,147,111	3,180,233	1,241,980
January-June, 1947	805	5,608,690	8,282,145	3,159,116
July-December, 1947	324	2,682,227	4,074,696	1,834,800
January-June, 1948	285	2,309,545	3,521,805	1,513,882
July-December, 1948	41	311,160	430,850	279,980
January, 1949	3	20,212	31,797	17,890
February	5	38,247	58,843	33,050
March	5	39,341	60,425	39,900
Grand Total	1769	13,156,533	19,640,794	8,120,598

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Cumulative Table of War-Built Vessels Sold Each Month by the United States Maritime Commission Under the Authority of the Merchant Ship Sales Act of 1946

Date	No.	For U.S. Flag Operation	For Foreign Flag Operation	Liberty Cargo	T2 Tankers
Aug., 1946	15	12	3	1	3
Sept., 1946	38	31	7	3	8
Oct., 1946	82	49	33	21	15
Nov., 1946	155	83	72	39	27
Dec., 1946	286	109	177	128	36
Jan., 1947	457	143	314	229	53
Feb., 1947	607	174	433	306	63
Mar., 1947	713	196	517	365	66
Apr., 1947	946	238	708	512	73
May., 1947	1030	276	754	539	95
June, 1947	1105	306	799	579	110
July, 1947	1174	326	848	615	115
Aug. 1947	1231	341	890	638	130
Sept., 1947	1272	351	921	645	155
Oct., 1947	1327	380	947	648	182
Nov., 1947	1366	406	960	650	206
Dec., 1947	1428	435	993	653	247
Jan., 1948	1475	472	1003	656	279
Feb., 1948	1526	504	1022	659	307
Mar., 1948	1578	538	1040	662	338
Apr., 1948	1644	568	1076	675	361
May, 1948	1698	598	1100	679	379
June, 1948	1715	607	1108	679	382
July, 1948	1728	618	1110	680	385
Aug., 1948	1739	628	1111	680	386
Sept., 1948	1741	630	1111	680	386
Oct., 1948	1748	636	1112	680	387
Nov., 1948	1752	640	1112	680	387
Dec., 1948	1756	644	1112	680	389
Jan., 1949	1759	646	1113	680	390
Feb., 1949	1764	651	1113	682	390
Mar., 1949	1769	656	1113	683	390
Apr., 1949	1773	660	1113	685	390

CUMULATIVE CHART OF VESSELS SOLD BY U.S.M.C. UNDER AUTHORITY OF MERCHANT SHIP SALES ACT 1946



Number, Tonnage and Horsepower of Each Type Sold

Type		No.	Gross Tons	Deadw't. Tons	H.P. Recip.	H.P. Turbine	H.P. Turbo-Elec.	H.P. Diesel
S.S. America	Passenger	1	26,314	14,331	.....	37,400	.....	.....
C-3	Passenger & Cargo	2	15,963	18,002	.....	17,200	.....	.....
EC2-S-C1	Liberty Cargo	669	4,814,314	7,120,584	1,672,500	.....	.....	.....
Canadian	Liberty Cargo	14	99,850	145,376	35,000	.....	.....	.....
EC2-S-AW1	Liberty Collier	23	152,789	253,428	57,500	.....	.....	.....
VC2-S-AP2	Victory Cargo	74	562,998	786,727	.....	488,400	.....	.....
VC2-S-AP3	Victory Cargo	52	395,636	554,871	.....	486,200	.....	.....
C3	Cargo	2	16,027	24,982	.....	18,700	.....	.....
C3E	Cargo	2	13,472	19,302	.....	17,600	.....	.....
C3-S-A2	Cargo	75	595,300	909,709	.....	701,250	.....	.....
C3-S-A3	Cargo	7	49,983	66,506	.....	61,600	.....	.....
C2-S-B1	Cargo	80	508,121	703,061	.....	528,000	.....	.....
C2-(M)	Cargo	4	24,615	34,894	.....	.....	.....	24,316
C2-S-AJ1	Cargo	16	131,956	170,560	.....	105,600	.....	.....
C2-S-AJ3	Cargo	24	194,450	255,280	.....	158,400	.....	.....
C2-S-E1	Cargo	4	24,660	43,248	.....	26,400	.....	.....
C2-S	Cargo	2	14,202	20,096	.....	14,000	.....	.....
C2-F	Cargo	1	6,509	9,133	.....	6,600	.....	.....
C2-SU	Cargo	1	6,586	9,600	.....	.....	.....	7,500
C1-A (M)	Cargo	42	225,940	305,422	.....	.....	.....	174,300
C1-A (S)	Cargo	6	30,714	43,965	.....	26,400	.....	.....
C1-B (S)	Cargo	12	80,532	105,625	.....	52,800	.....	.....
C1-B (M)	Cargo	2	13,572	18,115	.....	.....	.....	8,512
C1-MT-BU1	Cargo Lumber	4	12,532	19,564	.....	.....	.....	9,600
C1-S-AY1	Transport	6	43,062	14,196	.....	26,400	.....	.....
C1-M-AV1	Cargo	96	365,582	522,062	.....	.....	.....	163,200
C1-ME-AV6	Cargo	1	3,805	5,950	.....	.....	.....	2,160
N3-S-A1	Cargo	32	57,484	89,723	41,600	.....	.....	.....
N3-S-A2	Cargo	29	54,438	80,883	37,700	.....	.....	.....
T3-S-BZ1	Tanker	1	14,136	23,789	.....	13,400	.....	.....
T2-SE-A1	Tanker	390	4,025,165	6,419,342	.....	.....	2,824,610	.....
T1-M-BT1	Tanker	3	9,734	12,380	.....	.....	.....	4,200
T1-M-BT2	Tanker	15	48,184	59,985	.....	.....	.....	21,000
T2	Tanker	4	40,075	63,822	.....	48,800	.....	.....
T3-S-A1	Tanker	5	50,520	81,340	.....	38,500	.....	.....
T3-M-AZ1	Tanker	1	11,401	17,575	.....	.....	.....	7,500
Z-ET1-S-C3	Liberty Tanker	47	339,390	495,756	117,500	.....	.....	.....
Private	Tanker	4	39,642	64,810	.....	38,250	.....	.....
Navy YF	Lighter Barge	16	36,880	36,800	.....	.....	.....	.....
Grand Total		1769	13,156,533	19,640,794	1,961,800	2,911,900	2,824,610	422,288

Note: These tabulations include only vessels on which title has been transferred.

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War-Built Vessels Sold by United States Maritime Commission Under Terms of Merchant Ship Sales Act of 1946

By Registry—August 1st, 1946 to March 31st, 1949

Type and Flag	No.	Gross Tons	Deadweight Tons	Horsepower
United States				
S.S.America Passenger..	1	26,314	14,331	T 37,400
C-3 Pass.-Car..	2	15,963	18,002	T 17,200
Z-ET1-S-C3 Lib. Tkr...	47	339,390	495,756	R 117,500
T2 Tanker....	4	40,075	63,822	T 48,800
T3-M-AZ1 Tanker....	1	11,401	17,575	D 7,500
T3-S-A1 Tanker....	5	50,520	81,340	T 38,500
Private Tanker....	4	39,642	64,810	T 38,250
T2-SE-A1 Tanker....	187	1,926,817	3,078,122	TE 1,353,880
T1-M-BT1 Tanker....	2	6,472	8,265	D 2,800
T1-M-BT2 Tanker....	3	9,582	11,960	D 4,200
T3-S-BZ1 Tanker....	1	14,136	23,789	T 13,400
EC2-S-AW1 Collier....	23	152,789	253,428	R 57,500
C1-M-AV1 Cargo.....	6	22,854	34,210	D 10,200
C1-A (S) Cargo.....	6	30,714	43,965	T 26,400
C1-A (M) Cargo.....	5	25,657	36,355	D 20,750
C1-B (S) Cargo.....	9	60,399	79,193	T 39,600
C1-MT-BU1 Car.-Lum..	4	12,532	19,564	D 9,600
EC2-S-C1 Lib. Cargo.	94	676,923	1,007,623	R 235,000
C3 Cargo.....	2	16,027	24,982	T 18,700
C3 E Cargo.....	2	13,472	19,302	T 17,600
C3-S-A2 Cargo.....	75	595,300	909,709	T 701,250
C3-S-A3 Cargo.....	7	49,983	66,506	T 61,600
C2-S-B1 Cargo.....	76	483,265	668,138	T 501,600
C2-S-AJ1 Cargo.....	16	131,956	170,560	T 105,600
C2-S-AJ3 Cargo.....	24	194,450	255,280	T 158,400
C2-S-E1 Cargo.....	4	24,660	43,248	T 26,400
C2-S Cargo.....	2	14,202	20,096	T 14,000
C2-F Cargo.....	1	6,509	9,133	T 6,600
C2SU Cargo.....	1	6,586	9,600	DT 7,500
VC2-S-AP2 Vic. Cargo.	8	60,840	85,526	T 52,800
VC2-S-AP3 Vic. Cargo.	18	136,915	191,898	T 168,300
Navy YF Light. Bar.	16	36,880	36,800	.....
Totals.....	656	5,233,225	7,862,888	3,918,830
Argentina				
T1-M-BT1 Tanker....	1	3,262	4,115	D 1,400
T1-M-BT2 Tanker....	2	6,444	8,035	D 2,800
EC2-S-C1 Lib. Cargo.	2	14,388	21,000	R 5,000
VC2-S-AP2 Vic. Cargo.	9	68,442	95,256	T 59,400
VC2-S-AP3 Vic. Cargo.	8	60,851	85,251	T 74,800
N3-S-A2 Cargo.....	2	3,766	5,558	R 2,600
Totals.....	24	157,153	219,215	146,000
Belgium				
T2-SE-A1 Tanker....	1	10,296	16,287	TE 7,240
EC2-S-C1 Lib. Cargo.	4	28,726	42,699	R 10,000
VC2-S-AP2 Vic. Cargo.	4	30,422	42,469	T 26,400
VC2-S-AP3 Vic. Cargo.	6	45,658	64,101	T 56,100
Totals.....	15	115,102	165,556	99,740
Brasil				
C1-M-AV1 Cargo.....	12	45,676	63,534	D 20,400
Canada				
T2-SE-A1 Tanker....	8	82,983	131,201	TE 57,920
Chile				
C1-M-AV1 Cargo.....	2	7,610	12,040	D 3,400
C2-S-B1 Cargo.....	4	24,856	34,923	T 26,400
Totals.....	6	32,466	46,963	29,800
China				
VC2-S-AP2 Vic. Cargo.	3	22,821	31,974	T 19,800
EC2-S-C1 Lib. Cargo.	10	71,861	105,332	R 25,000
N3-S-A1 Cargo.....	2	3,582	5,686	R 2,600
N3-S-A2 Cargo.....	6	11,478	16,800	R 7,800
C1-M-AV1 Cargo.....	8	30,540	45,223	D 13,600
C1-S-AY1 Transport.	4	28,708	9,464	T 17,600
Totals.....	33	168,990	214,479	86,400
Colombia				
C1-M-AV1 Cargo.....	8	30,434	43,188	D 13,600
Cuba				
C1-M-AV1 Cargo.....	4	15,214	23,797	D 6,800
Denmark				
VC2-S-AP2 Vic. Cargo.	3	22,815	31,877	T 19,800
EC2-S-C1 Lib. Cargo.	9	64,676	94,796	R 22,500
C1A (M) Cargo.....	7	41,853	50,928	D 29,050
Totals.....	19	129,344	177,601	71,350
Egypt				
C1-S-AV1 Transport.	2	14,354	4,732	T 8,800
Finland				
N3-S-A2 Cargo.....	1	1,870	2,758	R 1,300
EC2-S-C1 Lib. Cargo.	2	14,352	21,000	R 5,000
Totals.....	3	16,222	23,758	6,300
France				
C1-M-AV1 Cargo.....	4	15,221	20,069	D 6,800
T2-SE-A1 Tanker....	18	186,256	296,653	TE 130,320
EC2-S-C1 Lib. Cargo.	76	546,383	807,462	R 190,000
Totals.....	98	747,860	1,124,184	327,120
Great Britain				
N3-S-A1 Cargo.....	30	53,902	84,037	R 39,000
C1-A (M) Cargo.....	1	7,092	7,306	D 4,150
C1-M-AV1 Cargo.....	4	15,336	21,050	D 6,800
EC2-S-C1 Lib. Cargo.	117	844,606	1,268,258	R 292,500
Canadian Lib. Cargo.	1	7,128	10,384	R 2,500
VC2-S-AP2 Vic. Cargo.	12	91,454	127,820	T 79,200
VC2-S-AP3 Vic. Cargo.	2	15,224	21,380	T 18,700
T2-SE-A1 Tanker....	51	527,230	836,828	TE 369,240
Totals.....	218	1,561,972	2,377,063	812,090

Type and Flag	No.	Gross Tons	Deadweight Tons	Horsepower
Greece				
T2-SE-A1 Tanker....	7	72,874	115,569	TE 50,680
C1-M-AV1 Cargo.....	2	7,627	11,064	D 3,400
EC2-S-C1 Lib. Cargo.	98	704,830	1,033,531	R 245,000
Totals.....	107	785,331	1,160,164	299,080
Honduras				
C1-M-AV1 Cargo.....	3	11,415	17,215	D 5,100
EC2-S-C1 Lib. Cargo.	25	179,893	266,357	R 62,500
Totals.....	28	191,308	283,572	67,600
Iceland				
C1-M-AV1 Cargo.....	1	3,805	6,013	D 1,700
India				
Canadian Lib. Cargo.	4	28,529	41,536	R 10,000
EC2-S-C1 Lib. Cargo.	5	35,948	52,243	R 12,500
VC2-S-AP3 Vic. Cargo.	6	45,652	64,094	T 56,100
Totals.....	15	110,129	157,873	78,600
Iran				
Canadian Lib. Cargo.	1	7,134	10,384	R 2,500
Italy				
N3-S-A2 Cargo.....	8	14,945	22,266	R 10,400
Canadian Lib. Cargo.	5	35,658	51,920	R 12,500
T2-SE-A1 Tanker....	20	206,057	331,139	TE 145,810
EC2-S-C1 Lib. Cargo.	90	646,813	949,359	R 225,000
Totals.....	123	903,473	1,354,684	393,710
Netherlands				
T1-M-BT2 Tanker....	7	22,576	28,030	D 9,800
T2-SE-A1 Tanker....	5	52,060	82,C08	TE 36,200
N3-S-A2 Cargo.....	3	5,572	8,400	R 3,900
C1-M-AV1 Cargo.....	6	22,830	30,124	D 10,200
C1A (M) Cargo.....	2	10,321	14,380	D 8,300
C2-(M) Cargo.....	1	6,198	8,540	D 6,000
EC2-S-C1 Lib. Cargo.	28	201,152	295,349	R 70,000
VC2-S-AP2 Vic. Cargo.	21	159,729	223,290	T 138,600
VC2-S-AP3 Vic. Cargo.	11	83,724	117,428	T 102,850
Totals.....	84	564,162	807,549	385,850
New Zealand				
C1-B(M) Cargo.....	1	6,751	8,975	D 4,112
C1-A(M) Cargo.....	1	5,158	7,312	D 4,150
Totals.....	2	11,909	16,287	8,262
Nicaragua				
N3-S-A2 Cargo.....	2	3,665	5,600	R 2,600
Norway				
T2-SE-A1 Tanker....	17	175.537	279,887	TE 123,080
C1-M-AV1 Cargo.....	13	49,481	68,118	D 22,100
C1A (M) Cargo.....	26	135,859	189,141	D 107,900
C1B (M) Cargo.....	1	6,821	9,140	D 4,400
EC2-S-C1 Lib. Cargo.	45	323,459	476,200	R 112,500
Totals.....	102	691,157	1,022,486	369,980
Pakistan				
Canadian Lib. Cargo.	1	7,133	10,384	R 2,500
Panama				
C2-(M) Cargo.....	3	18,417	26,354	D 18,316
C1-B(S) Cargo.....	1	6,711	8,591	T 4,400
C1-M-AV1 Cargo.....	6	22,838	33,389	D 10,200
EC2-S-C1 Lib. Cargo.	58	417,125.	616,386	R 145,000
VC2-S-AP2 Vic. Cargo.	7	53,235	74,315	T 46,200
T2-SE-A1 Tanker....	71	733,119	1,168,971	TE 514,040
T1-M-BT2 Tanker....	1	3,160	3,925	D 1,400
Totals.....	147	1,254,605	1,931,931	739,556
Peru				
VC2-S-AP2 Vic. Cargo.	2	15,214	21,280	T 13,200
C1-M-AV1 Cargo.....	4	15,233	22,954	D 6,800
N3-S-A2 Cargo.....	2	3,740	5,558	R 2,600
Totals.....	8	34,187	49,792	22,600
Philippines				
C1-M-AV1 Cargo.....	4	15,223	23,862	D 6,800
C1-B (S) Cargo.....	2	13,422	17,841	T 8,800
Totals.....	6	28,645	41,703	15,600
Poland				
VC2-S-AP3 Vic. Cargo.	1	7,612	10,719	T 9,350
Portugal				
N3-S-A2 Cargo.....	3	5,662	8,343	R 3,900
Sweden				
C1-M-AV1 Cargo.....	4	15,220	20,179	D 6,800
EC2-S-C1 Lib. Cargo.	2	14,421	21,009	R 5,000
Totals.....	6	29,641	41,188	11,800
Turkey				
T2-SE-A1 Tanker....	1	10,448	16,738	TE 7,240
T1-M-BT2 Tanker....	1	3,262	4,110	D 1,400
VC2-S-AP2 Vic. Cargo.	2	15,208	21,168	T 13,200
C1-M-AV1 Cargo.....	4	15,220	20,027	D 6,800
N3-S-A2 Cargo.....	2	3,740	5,600	R 2,600
Totals.....	10	47,878	67,643	31,240
Union of So. Africa				
T2-SE-A1 Tanker....	2	20,896	33,353	TE 14,480
EC2-S-C1 Lib. Cargo.	4	28,758	41,980	R 10,000
VC2-S-AP2 Vic. Cargo.	3	22,818	31,752	T 19,800
Totals.....	9	72,472	107,085	44,280

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Maritime Commission Opens Bids for H. F. Alexander Ships

The U. S. Maritime Commission on June 23 authorized Pacific Coast Steamship Co. to invite bids on construction of two 25-knot, 17,940 gross ton passenger-trailership type vessels for fast overnight service between San Francisco and Long Beach, carrying passenger automobiles, trucks and trailers.

Pacific Coast Steamship Co. is headed by H. F. Alexander, well-known pioneer West Coast steamship operator. His operations have included the steamers BUCKMAN and WATSON between San Francisco and Los Angeles in 1906, later the Admiral Line on coastwise, then the Alexander ships and, finally the YALE and HARVARD until they were taken over by the government in World War I.

Port authorities of Long Beach and San Francisco contemplate construction of the southern terminal opposite the Long Beach Harbor Board headquarters on El Embarcadero and the northern terminal at the north end of the San Francisco Ferry Building.

The bids were to be sent out by July 1 and were returnable within 60 days, under the agreement with the Maritime Commission; the major share of the construction cost to be financed by the government under the mortgage aid provisions of Section 509 of the Merchant Marine Act of 1936. This section permits the Commission to underwrite 87½% of the cost. Early estimates place cost of each vessel near $7,500,000.

The ships will have accommodations for 382 passengers each, a dining salon, night club and bar. Schedules call for daily departure at 6 p.m. from each end, arriving at destination at 9 a.m. the next day.

The Navy has approved plans and specifications because the vessels could be converted quickly to military use, primarily as heavy tank carriers. Sun Shipbuilding and Dry Dock Co., Chester, Pa., worked with Mr. Alexander on plans.

General characteristics of the ships are: Length: overall, 563 feet; between perpendiculars, 530 feet; breadth: at main deck, 90 feet; at waterline, 83 feet; depth to main deck, 36 feet; deadweight tonnage, 5300 tons. The power plant of each will consist of two sets of cross-compound steam turbines with double reduction gear having normal shp of 36,000 at 170 rpm.

Each vessel will have space for 176 vehicles of an average 30 feet in length and the transportation of trucks and trailers is expected to account for the greater proportion of the gross revenue.

The California Public Utilities Commission in approving the issuance of a certicate of public convenience, said:

"The record is convincing that there is need for services by vessel between the Los Angeles and San Francisco areas. The resumption of a passenger service, which, in the past, proved successful, will be in the public interest. The overnight carriage of motor freight by vessel would make available to truck operators a new and frequently more economical method for serving the two areas, also alleviating present congested highway conditions."

War-Built Vessels Sold by U. S. M. C. Under M. S. S. Act of 1946 By Registry—Aug. 1, 1946 to Mar. 31, 1949 (Cont'd)

Type and Flag	No.	Gross Tons	Deadweight Tons	Horsepower
Uruguay				
C1-M-AV1 Cargo	1	3,805	6,006	D 1,700
C1-ME-AV6 Cargo	1	3,805	5,950	D 2,160
Canadian Liberty Cargo	2	14,268	20,768	R 5,000
T2-SE-A1 Tanker	2	20,592	32,586	TE 14,480
Totals	6	42,470	65,310	23,340
Venezuela				
T1-M-BT2 Tanker	1	3,160	3,925	D 1,400
Grand Totals	1769	13,156,533	19,640,794	8,120,598
American Flag				
Passenger	1	26,314	14,331	37,400
Passenger and Cargo	2	15,963	18,002	17,200
Cargo	383	2,716,033	3,948,316	2,239,400
Tanker	254	2,438,035	3,845,439	1,624,830
Barge	16	36,880	36,800	.....
Totals	656	5,233,225	7,862,888	3,918,830
Foreign Flag				
Cargo	891	5,740,034	8,370,350	2,686,438
Tanker	216	2,140,212	3,393,360	1,488,930
Transport	6	43,062	14,196	26,400
Totals	1113	7,923,308	11,777,906	4,201,768

Note: This tabulation includes only vessels on which title has been transferred.

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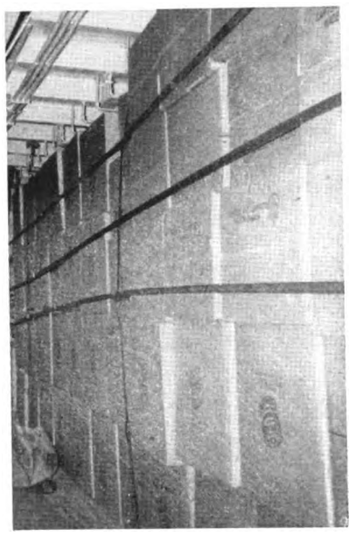
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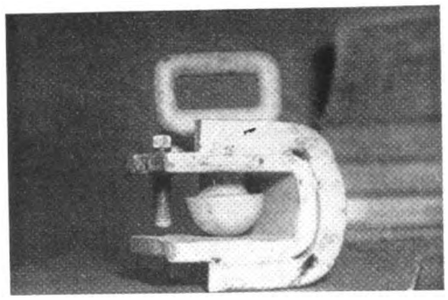
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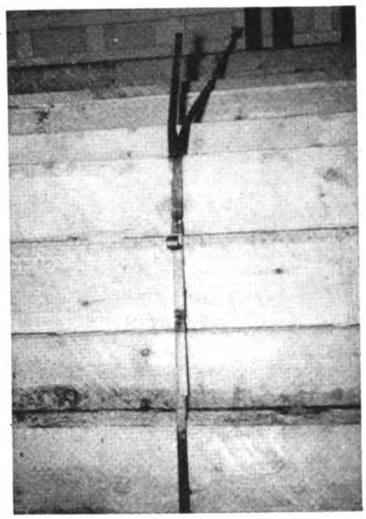
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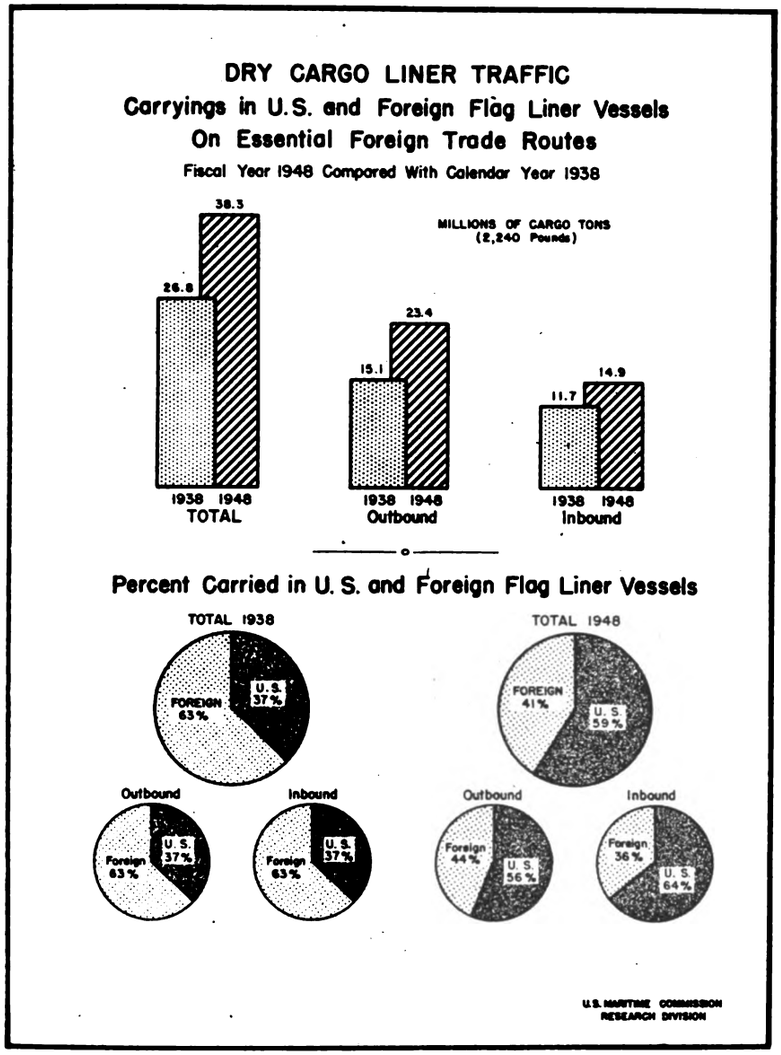


Chart 1

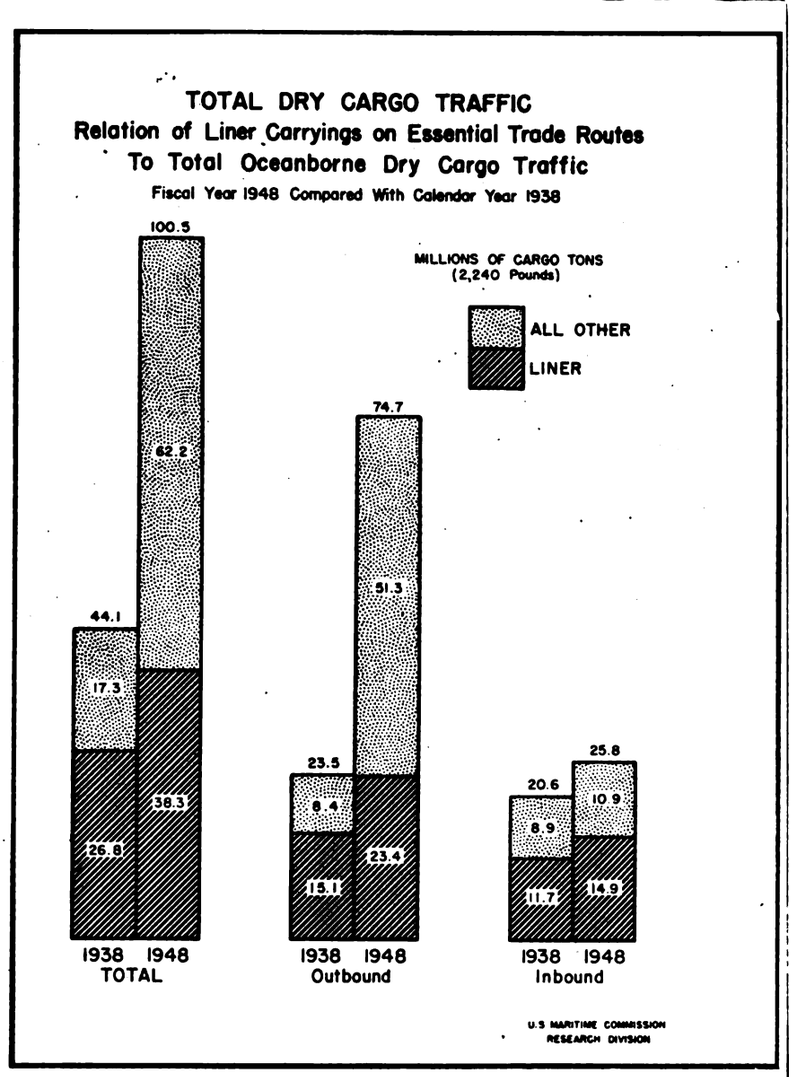


Chart 2

REPORT ON DRY CARGO LINER TRAFFIC

Traffic data regarding dry cargo liner vessels in regular berth service during the fiscal year 1948 (July 1, 1947-June 30, 1948) are now available in summarized form for each U. S. foreign trade route which has been declared essential by the Maritime Commission.

Six summary statements, prepared by the Trade Routes Branch of the Research Division, are appended to this report and show separately for each of the essential trade routes the total amount (and also the outbound and inbound tonnage) of freight carried in dry cargo liner vessels under the U. S. flag and under foreign flags during the fiscal year 1948, as well as for the three six-month periods—January-June 1947, July-December 1947, and January-June 1948. For comparative purposes similar information is shown for 1938, the last full peace-time year before World War II. To aid in visualizing changes between the levels of prewar and postwar dry cargo liner traffic, five graphic charts accompany the text of this report.

U. S. Flag Liners' Share of 1948 Trade

The volume of dry cargo liner traffic on essential trade routes in fiscal 1948 was only a little less than in calendar 1947 (the peak year in U. S. history), and was 43 percent greater than in 1938.

U. S. flag carryings in 1948* were nearly 130 percent greater than in 1938 and represented 59 percent of the total as compared with 37 percent in 1938. In contrast, foreign flag liner vessels carried 8 percent less cargo in 1948 than in 1938, and instead of obtaining 63 percent as in 1938 accounted for only 41 percent in 1948. However, carryings in foreign flag lines in the first half of 1948 showed a slight increase over the last half of 1947 while U. S. flag lines showed a slight decrease.

Total liner traffic in 1948 amounted to 38.3 million tons which was 11.5 million tons greater than in 1938 (see Chart No. 1). U. S. flag liner carryings increased from 9.8 million tons in 1938 to 22.6 million tons in 1948, while foreign flag liner carryings decreased slightly from 17.0 million tons to 15.7 million tons. Overall, however, total dry cargo traffic in 1948 declined noticeably from the high point of 1947. This was due almost entirely to a falling off in non-liner tonnage which had been moving large quantities of relief cargo.

*Note: Wherever 1948 is used in this report it refers to the fiscal year—July 1, 1947 through June 30, 1948.

Liner Carryings in Relation to Non-Liner Carryings

The pronounced shift in relationship between liner carryings on essential U. S. foreign trade routes and total oceanborne commerce of the United States in 1948 and 1938 is shown in the table on the following page.

As shown in the attached table and in Chart No. 2, total foreign oceanborne dry cargo commerce which moved through United States ports during 1948 in liner and non-liner vessels amounted to 100.5 million tons; in 1938 it was 44.1 million tons. Of the 100.5 million tons carried in 1948, 38.3 million tons moved in liner service vessels on essential U. S. foreign trade routes. The remaining 66.2 million tons consisted, for the most part, of bulk

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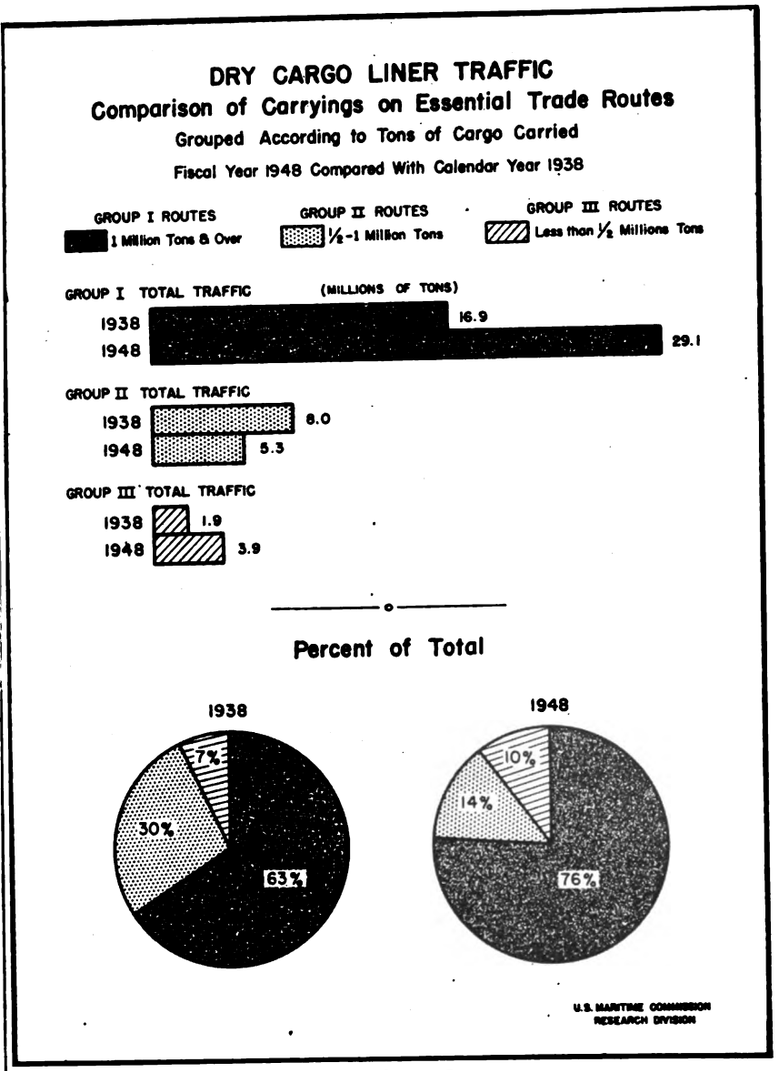


Chart 3

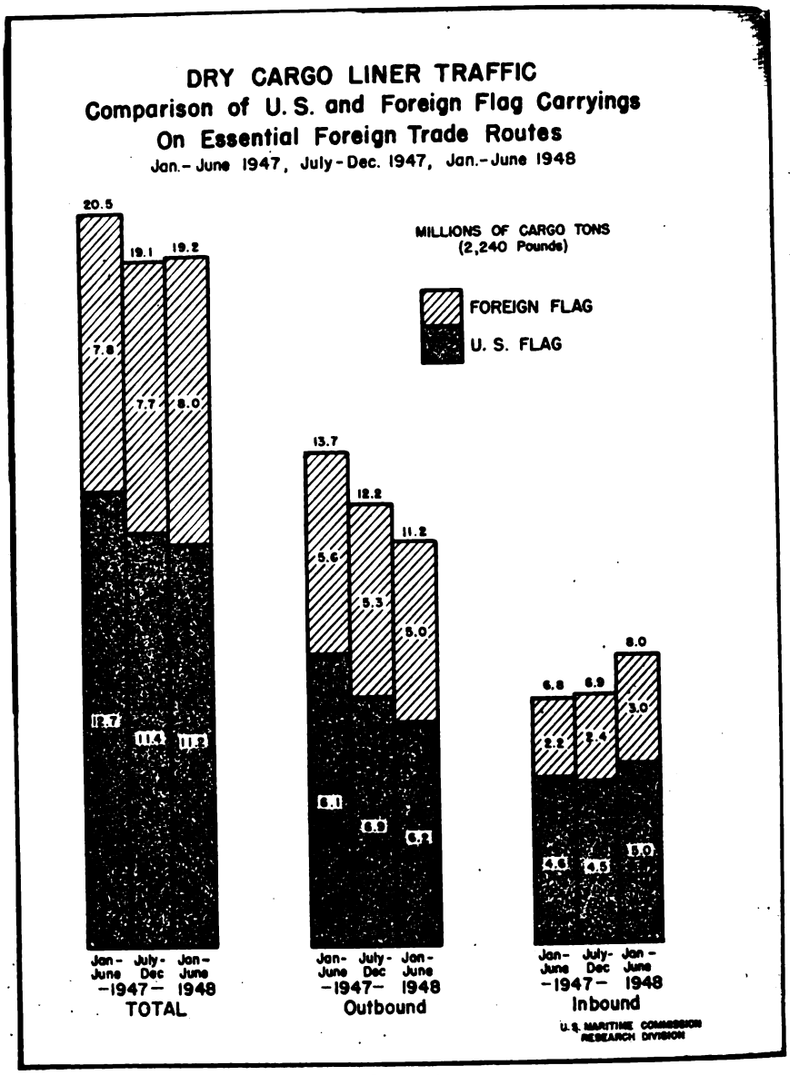


Chart 4

cargo (such as coal, grain and ore) which moved in non-liner vessels on essential trade routes, and bulk and general cargo carried on trade routes which have not been declared essential.

Total non-liner carryings ("Other Traffic" in the attached table) increased from 17.3 million tons in 1938 to 66.2 million tons in 1948 due, in great part, to shipments of relief and rehabilitation cargo to Europe over essential trade routes. This drastically affected the outbound-inbound ratio which in 1938 with 8.4 million tons outward and 8.9 million tons inward was almost evenly balanced.

During the 12 months ended December 31, 1947 the outbound movement of non-liner traffic had increased to 54.9 million tons which was 6½ times the 1938 volume, while inbound traffic amounted to 11.6 million tons—an increase of 30 percent. During the first six months of 1948, however, non-liner traffic declined materially from its 1947 peak as outward carryings dropped from 33.3 million tons in the last half of 1947 to 18.0 million tons in the first half of 1948 and inbound carryings remained practically the same.

The substantial increase in liner carryings on essential trade routes (from 26.8 million tons in 1938 to 38.3 million tons in 1948) was accompanied by a less pronounced change in the outbound-inbound ratio than was experienced in non-liner carryings. Whereas in 1938 outbound liner carryings were 29 percent greater than the inbound movement in the 12 months ended June 30, 1948 they were 54 percent greater. Outbound liner carryings in U. S. flag vessels in 1938 were 30 percent greater, and in 1948 they were 37 percent greater than inward carryings.

LINER CARRYINGS IN RELATION TO NON-LINER CARRYINGS

Dry Cargo Traffic (Millions tons of 2240 pounds)	Total		Outbound		Inbound	
	1948	1938	1948	1938	1948	1938
Total Traffic	**100.5**	**44.1**	**74.7**	**23.5**	**25.8**	**20.6**
Liner Traffic on Essential Trade Routes[1]	38.3	26.8	23.4	15.1	14.9	11.7
In U. S. Flag Vessels	22.6	9.8	13.1	5.5	9.5	4.3
In For. Flag Vessels	15.7	17.0	10.3	9.6	5.4	7.4
Percent U. S.	(59.1)	(36.7)	(56.1)	(36.8)	(63.7)	(36.7)
Other Traffic[2]	62.2	17.3	51.3	8.4	10.9	8.9
In U. S. Flag Vessels	37.0	2.0	31.1	0.2	5.9	1.8
In For. Flag Vessels	25.2	15.3	20.2	8.2	5.0	7.1
Percent U. S.	(59.5)	(11.6)	(60.6)	(0.2)	(54.1)	(20.2)

Source: Reports (M.C. Forms 7801 and 7802) from vessel operators.

[1] Includes traffic in vessels of 1,000 or more gross tons in regular liner berth service only on essential U. S. foreign trade routes.

[2] Includes traffic, except with Canada via the Great Lakes, in vessels of 1,000 or more gross tons (a) in non-liner (tramp, irregular, or industrial) service on all routes, (b) in liner service on routes not declared essential, (c) military cargo in vessels not under military control.

U. S. Flag Liner Services Maintain Leading Position in 1948

The predominant position of U. S. flag liner services in overseas trade was maintained during the first six months of 1948 in spite of a slight but continuing downward trend which has been in evidence since the first half of 1947. The table on the next page and Chart No. 3 show carryings on essential trade routes by half-year periods from January 1, 1947, to June 30, 1948:

This table shows that during the first half of 1948 total liner traffic on essential trade routes was 100,000 tons greater than in the last half of 1947 but was still 1.3 million tons less than in the first half of 1947. At the same time it became evident that the share of traffic obtained by the U. S. flag vessels had been declining gradually from 62.1 percent in the first half of 1947 to 60.1 percent in the second half of 1947, and to 58.1 percent in the first half of 1948.

It should be borne in mind, however, that this downward trend in liner traffic was much less pronounced than in non-liner traffic which after showing an upward trend throughout 1947 with total cargo tons of 66.5 million tons that year dropped to 23.4 million tons for the first six months of 1948.

Examination of the figures for liner carryings on individual essential foreign trade routes in 1938 and 1948, which appear in tables No. 1 to 6, show tremendous

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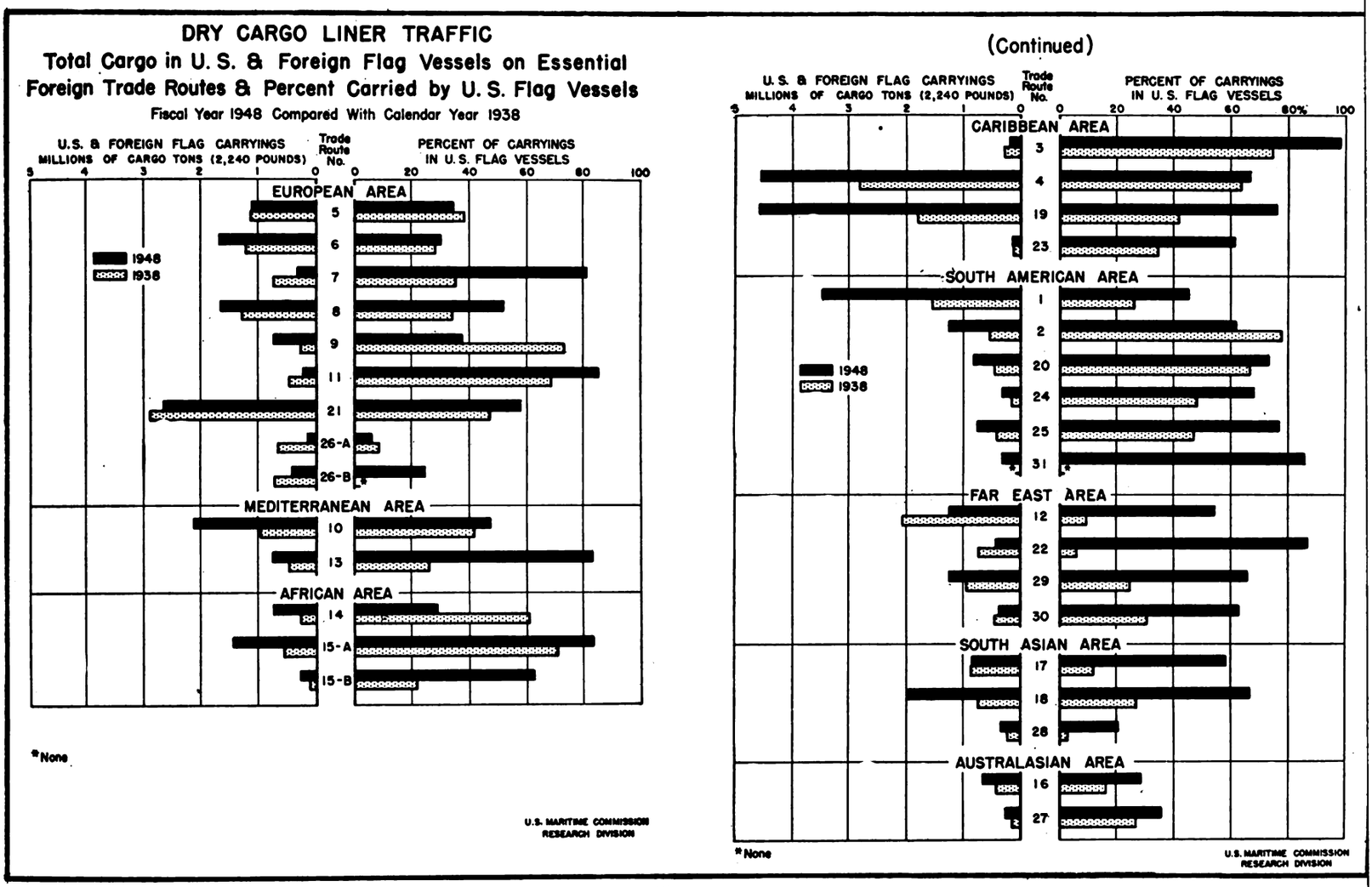


Chart 5

variations in the number of tons moving in each of those years—from as little as 100,000 tons to almost five million tons. In order to visualize which routes contribute most tonnage to U. S. overseas shipping and what shifts occurred in 1948 as compared with 1938, the routes have been grouped as follows:

Group I. Large Routes (1 million tons and over).

Group II. Medium Routes (½-1 million tons).

Group III. Small Routes (less than ½ million tons).

Group I trade routes which in calendar year 1938 accounted for 63 percent of the total traffic on all trade routes (see Chart No. 3) increased their carryings to 76 percent in fiscal year 1948; Group II routes had 30 percent in 1938 but only 14 percent in 1948; Group III routes accounted for 7 percent in 1938 and 10 percent in 1948. Details as to routes comprising each group and the shifts which occurred between groups are summarized below:

Group I.

1938 16.9 million tons (T.R. 1, 4, 5, 6, 8, 10, 12, 19, 21, 29)

1948 29.1 million tons (T.R. 1, 2, 4, 5, 6, 8, 10, 12, 15-A, 18, 19, 21, 29)

All ten routes with more than 1 million tons each in 1938 were still in this group in 1948. With the addition of three routes (2, 15-A, and 18) which moved up from Group II, the number of routes in 1948 totaled thirteen.

Group II.

1938 8.0 million tons (T.R. 2, 7, 11, 13, 15-A, 16, 17, 18, 20, 22, 26-A, 26-B, 30)

1948 5.3 million tons (T.R. 9, 13, 14, 16, 17, 20, 25)

Of the 13 routes which had between ½ and 1 million tons each in 1938, only four (13, 16, 17 and 20) remained in 1948. These four routes plus three (9, 14, and 25) which moved up from the "less than ½ million ton" group brought the 1948 total to seven.

Group III.

1938 1.9 million tons (T.R. 3, 9, 14, 15-B, 23, 24, 25, 27, 28, 30)

1948 3.9 million tons (T.R. 3, 7, 11, 15-B, 22, 23, 24, 26-A, 26-B, 27, 28, 30, 31)

(Continued on Page 85)

CARRYINGS ON ESSENTIAL TRADE ROUTES BY HALF-YEAR PERIODS FROM JANUARY 1, 1947 TO JUNE 30, 1948

Liner Traffic (Millions tons of 2240 pounds)	Total			Outbound			Inbound		
	1947 Jan-June	1947 July-Dec.	1948 Jan-June	1947 Jan-June	1947 July-Dec.	1948 Jan-June	1947 Jan-June	1947 July-Dec.	1948 Jan-June
Total	20.5	19.1	19.2	13.7	12.2	11.2	6.8	6.9	8.0
In U. S. Vessels	12.7	11.4	11.2	8.1	6.9	6.2	4.6	4.5	5.0
In For. Vessels	7.8	7.7	8.0	5.6	5.3	5.0	2.2	2.4	3.0
Percent U. S.	(62.1)	(60.1)	(58.1)	(59.4)	(56.7)	(55.5)	(67.5)	(66.1)	(61.6)

TRAFFIC BY FOREIGN TRADE AREAS

Trade Areas (Million Tons of 2240 Pounds)	Essential Trade Routes Within Areas	Total Cargo Tons		In U. S. Flag Vessels Cargo Tons		In U. S. Flag Vessels Percent[1]	
		1948	1938	1948	1938	1948	1938
Total All Areas	(33 Trade Routes)	38.3	26.8	22.6	9.8	59.1	36.7
European	5, 6, 7, 8, 9, 11, 21, 26A, 26B	9.1	9.6	4.2	3.5	46.2	36.7
Mediterranean	10, 13	2.9	1.4	1.6	0.5	57.7	37.3
African	14, 15A, 15B	2.5	0.9	1.6	0.5	65.0	62.6
Caribbean	3, 4, 19, 23	9.4	5.1	6.8	2.8	72.4	56.2
South American	1, 2, 20, 24, 25, 31	7.0	3.1	4.1	1.4	58.4	45.1
Far East	12, 22, 29, 30	3.3	4.3	2.1	0.6	63.9	14.5
South Asian	17, 18, 28	3.1	1.8	1.9	0.3	59.7	17.3
Australasian	16, 27	1.0	0.6	0.3	0.1	30.8	19.5

[1] Percentages calculated before rounding cargo totals to millions.

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REPORT ON U.S. DRY CARGO OVERSEAS TRADE

The accompanying charts and table indicate that the percentage and volume of the dry cargo carried on American flag vessels in the waterborne foreign commerce of the United States has been declining month by month since the beginning of 1947, when in January 59 percent of the exports and about 57 percent of the imports were transported on American ships. For the year 1947 American flag vessels carried 51 percent of our dry cargo exports and 54.1 percent of the imports. However, in 1948 only 40.3 percent of our dry cargo exports and 46.9 percent of our imports moved on ships of the United States. It would seem that we are again tobogganing towards the prewar low when only 24 percent of our combined exports and imports was carried on American ships.

Exports of oil and petroleum products via American tankers in 1947 show only a 35.5 percent participation in the trade, with this figure dropping to 31.6 percent in 1948. Imports of oil, mostly crude, in 1947 show American tanker participation to the extent of 74.8 percent and in 1948 it was 75.8 percent, most of this oil being brought in by American oil companies.

Only 29.1 percent of our export and 35.7 percent of our import dry cargo trade with the United Kingdom and Eire in 1948 was carried in American bottoms, the comparative figures for 1947 being 37.5 percent and 32.1 percent, respectively. In the trade to the West Coast of South America, American ships succeeded in carrying 58.6 percent of our exports last year and 84.9 percent of our imports, including only dry cargo. In another very large trade area, the Baltic, Scandinavia, Iceland and Greenland, American cargo ships moved only 27.9 percent of our imports last year and but 20.4 percent of our exports.

It is only by strict regulation and enforcement of the 50 percent rule for participation of American flag ships in E. C. A. shipments that American shipping can be assisted in maintaining even the present unbalanced total participation in our foreign trade. The trend has been consistently down each month for the past twenty-four months and promises to continue in this direction.

The following report prepared by the Bureau of Government Aids of the U.S. Maritime Commission gives a complete analysis of the prewar and postwar pattern of trade.

Maritime Commission Report

For the first time since the war, the Maritime Commission is in position to present a summary picture of the total dry cargo tonnage of United States oceanborne foreign trade for an annual period (July 1947-June 1948), and to point out the changes that have occurred in the volume and composition of this traffic during the past decade.

In 1938, the pattern of United States foreign trade was quite settled with respect to both *liner* (berth, general cargo) traffic and *non-liner* (tramp, industrial, dry bulk cargo) traffic. Also, it will be recalled, 1938 was the last year before war broke out in Europe which brought vast changes in United States foreign trade.

The postwar year, fiscal 1948, represents the first annual period since the war that United States foreign trade has been fairly well stabilized. The tremendous surge of postwar foreign shipping to satisfy pent-up demands which was so evident during the early part of 1947 declined somewhat during the latter part of the year and then leveled off with respect to liner traffic during the first half of 1948. Non-liner traffic, which included large tonnages of relief and rehabilitation goods to Europe, was at a considerably lower level during the first half of 1948 than during the last half of 1947.

Percentage and Volume of Dry Cargo and Tanker Cargo Carried on American Flag Vessels in the Water-Borne Foreign Commerce of the United States — 1947 to December 1948

(In Millions of Pounds)

Year and Month	EXPORTS						IMPORTS					
	Dry Cargo			Tanker			Dry Cargo			Tanker		
	Total	American	% Am.	Total	American	% Am.	Total	American	% Am.	Total	American	% Am.
1947												
January	11,767.4	6,953.0	59.1	1,621.5	700.7	43.2	4,377.2	2,494.3	56.9	5,245.3	3,780.3	72.0
February	12,147.6	7,070.7	58.2	2,487.7	1,088.1	43.7	3,786.7	2,317.6	61.2	4,414.7	3,366.2	76.2
March	14,556.4	8,265.8	56.8	2,397.1	1,090.1	45.5	4,092.9	2,509.4	61.3	5,106.4	4,047.2	79.3
April	16,839.9	8,798.7	52.2	2,787.6	1,162.2	41.7	5,009.9	2,981.7	59.5	4,733.3	3,385.8	71.5
May	24,008.2	11,866.0	49.4	2,501.0	878.6	35.1	5,336.5	3,003.9	56.3	4,980.7	3,605.8	72.4
June	22,287.8	11,070.0	49.7	2,649.9	1,078.4	40.7	6,081.0	2,896.9	47.6	4,022.1	2,785.6	69.3
July	19,498.9	9,388.4	48.1	3,244.3	1,158.5	35.7	6,810.8	3,501.4	51.4	4,453.6	3,334.6	74.9
August	24,660.6	11,922.4	48.1	2,757.9	804.1	29.2	6,502.8	3,311.1	51.2	4,027.2	2,951.6	73.3
September	20,868.8	10,253.4	49.1	2,822.8	881.7	31.2	5,823.7	2,825.3	48.4	3,985.0	3,152.6	78.9
October	20,604.6	9,538.1	46.3	2,827.5	866.0	30.6	5,864.5	2,951.1	50.3	4,113.0	3,176.7	77.2
November	18,304.6	9,263.3	50.6	2,264.0	560.4	24.8	5,251.5	2,759.1	52.5	4,020.5	3,313.7	82.4
December	13,161.1	7,102.8	54.0	1,566.9	361.1	23.4	5,249.4	3,177.2	60.4	4,851.1	3,449.4	71.1
Totals	218,705.9	111,492.6	51.0	29,928.2	10,629.9	35.5	64,186.9	34,729.0	54.1	53,952.9	40,349.5	74.8
1948												
January	11,571.3	6,180.0	53.4	1,454.6	210.0	14.4	4,619.9	2,632.1	57.0	4,248.1	3,343.5	78.7
February	10,701.1	5,591.6	52.3	1,219.6	299.2	24.5	4,726.7	2,810.1	59.5	4,684.3	3,512.2	75.0
March	9,707.9	4,841.3	49.9	1,773.3	399.2	22.5	5,823.5	3,299.3	56.7	5,457.5	4,202.8	77.0
April	8,335.8	3,976.5	47.7	2,371.8	598.7	25.2	5,009.8	2,813.3	56.2	4,931.9	3,520.8	71.4
May	14,867.2	5,995.0	40.3	2,570.5	936.1	36.4	5,758.3	2,883.9	50.1	4,730.1	3,476.3	73.5
June	15,764.9	6,233.9	39.5	2,271.8	899.1	39.6	7,424.3	3,443.6	46.4	5,421.2	4,049.2	74.7
July	15,271.1	5,491.1	36.0	2,784.2	1,058.8	38.0	6,378.2	2,831.1	44.4	4,944.3	3,543.3	71.7
August	16,085.9	5,504.1	34.2	2,631.6	977.9	37.2	7,112.6	2,943.2	41.4	4,840.3	3,599.1	74.3
September	14,444.7	4,860.2	33.6	2,019.5	560.7	27.8	6,130.7	2,472.8	40.3	5,107.5	4,047.6	79.2
October	13,598.6	4,345.9	32.0	1,941.1	441.2	22.7	7,784.7	2,945.0	37.8	4,924.2	3,781.1	76.8
November	10,733.4	3,708.3	34.5	1,839.9	539.6	29.3	6,062.4	2,470.9	40.7	5,920.3	4,491.8	75.9
December	10,573.2	4,353.4	41.2	2,090.6	967.2	46.3	6,397.1	2,893.4	45.2	6,273.9	4,999.0	79.7
Totals	151,654.4	61,114.5	40.3	24,968.7	7,887.9	31.6	73,320.0	34,404.6	46.9	61,512.3	46,651.1	75.8

Source: Census Bureau. Note: Includes trade with Canada

Note: Totals for 1948 represent the sums of unrounded figures, hence may vary slightly from the sums of the rounded amounts.

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U. S. Dry Cargo Oceanborne Foreign Trade by Six-Month Periods—FISCAL 1948

Carryings in U. S. and Foreign Flag Vessels by Type of Services

(Millions of Tons of 2240 Pounds)

Type of Cargo and Service of Carrier	Total			United States Flag Vessels			Foreign Flag Vessels		
	Fiscal 1948	July-Dec. 1947	Jan-June 1948	Fiscal 1948	July-Dec. 1947	Jan-June 1948	Fiscal 1948	July-Dec. 1947	Jan-June 1948
GRAND TOTAL	**100.5**	**57.9**	**42.6**	**59.6**	**35.4**	**24.2**	**40.9**	**22.5**	**18.4**
I. Commercial Cargo	**92.4**	**52.6**	**39.8**	**51.6**	**30.1**	**21.5**	**40.8**	**22.5**	**18.3**
Liner Vessels	**39.3**	**19.6**	**19.7**	**23.1**	**11.7**	**11.4**	**16.2**	**7.9**	**8.3**
On Essential T.R.	38.3	19.1	19.2	22.6	11.4	11.2	15.7	7.7	8.0
On Other T.R.	1.0	0.5	0.5	0.5	0.3	0.2	0.5	0.2	0.3
Tramp Vessels	**49.5**	**31.2**	**18.3**	**26.6**	**17.5**	**9.1**	**22.9**	**13.7**	**9.2**
On Essential T.R.	48.0	30.2	17.8	25.8	17.0	8.8	22.2	13.2	9.0
On Other T.R.	1.5	1.0	0.5	0.8	0.5	0.3	0.7	0.5	0.2
Industrial Vessels	**3.6**	**1.8**	**1.8**	**1.9**	**0.9**	**1.0**	**1.7**	**0.9**	**0.8**
On Essential T.R.	1.9	0.8	1.1	1.7	0.7	1.0	0.2	0.1	0.1
On Other T.R.	1.7	1.0	0.7	0.2	0.2	....	1.5	0.8	0.7
II. Military Cargo	**8.1**	**5.3**	**2.8**	**8.0**	**5.3**	**2.7**	**0.1**	*	**0.1**
Liner Vessels	1.3	0.6	0.7	1.2	0.6	0.6	0.1	*	0.1
Tramp Vessels	6.8	4.7	2.1	6.8	4.7	2.1	*	...	*

Industrial Vessels (Included with Liners in II-Military Cargo).

Note: Excludes traffic between U. S. Great Lakes ports and ports in Canada.

* Less than 50,000 tons.

Source: Reports (M.C. Forms 7801 and 7802 for vessels 1,000 gross tons and over) from vessel operators.

Prepared in Trade Routes Branch
Division of Traffic

UNITED STATES MARITIME COMMISSION
BUREAU OF GOVERNMENT AIDS

United States Dry Cargo Oceanborne Foreign Trade

U. S. and Foreign Flag Carryings

In Liner, Tramp, and Industrial Services—FISCAL YEAR

July 1, 1947 to June 30, 1948

(Millions of Tons of 2240 Pounds)

Type of Cargo and Service of Carrier	Total			Outbound			Inbound		
	Total	U.S. Flag	For. Flag	Total	U.S. Flag	For. Flag	Total	U.S. Flag	For. Flag
GRAND TOTAL	**100.5**	**59.6**	**40.9**	**74.7**	**44.2**	**30.5**	**25.8**	**15.4**	**10.4**
I. Commercial Cargo	**92.4**	**51.6**	**40.8**	**66.7**	**36.3**	**30.4**	**25.7**	**15.3**	**10.4**
Liner Vessels	**39.3**	**23.1**	**16.2**	**23.9**	**13.3**	**10.6**	**15.4**	**9.8**	**5.6**
On Essential T.R.	38.3	22.6	15.7	23.4	13.1	10.3	14.9	9.5	5.4
On Other T.R.	1.0	0.5	0.5	0.5	0.2	0.3	0.5	0.3	0.2
Tramp Vessels	**49.5**	**26.6**	**22.9**	**42.8**	**23.0**	**19.8**	**6.7**	**3.6**	**3.1**
On Essential T.R.	48.0	25.8	22.2	42.2	22.8	19.4	5.8	3.0	2.8
On Other T.R.	1.5	0.8	0.7	0.6	0.2	0.4	0.9	0.6	0.3
Industrial Vessels	**3.6**	**1.9**	**1.7**	*	*	*	**3.6**	**1.9**	**1.7**
On Essential T.R.	1.9	1.7	0.2	*	*	*	1.9	1.7	0.2
On Other T.R.	1.7	0.2	1.5	*	....	*	1.7	0.2	1.5
II. Military Cargo	**8.1**	**8.0**	**0.1**	**8.0**	**7.9**	**0.1**	**0.1**	**0.1**	*
Liner Vessels	1.3	1.2	0.1	1.3	1.2	0.1	*	*	*
Tramp Vessels	6.8	6.8	*	6.7	6.7	....	0.1	0.1	*

Industrial Vessels (Included with Liners in II-Military Cargo).

Note: Excludes traffic between U. S. Great Lakes ports and ports in Canada.

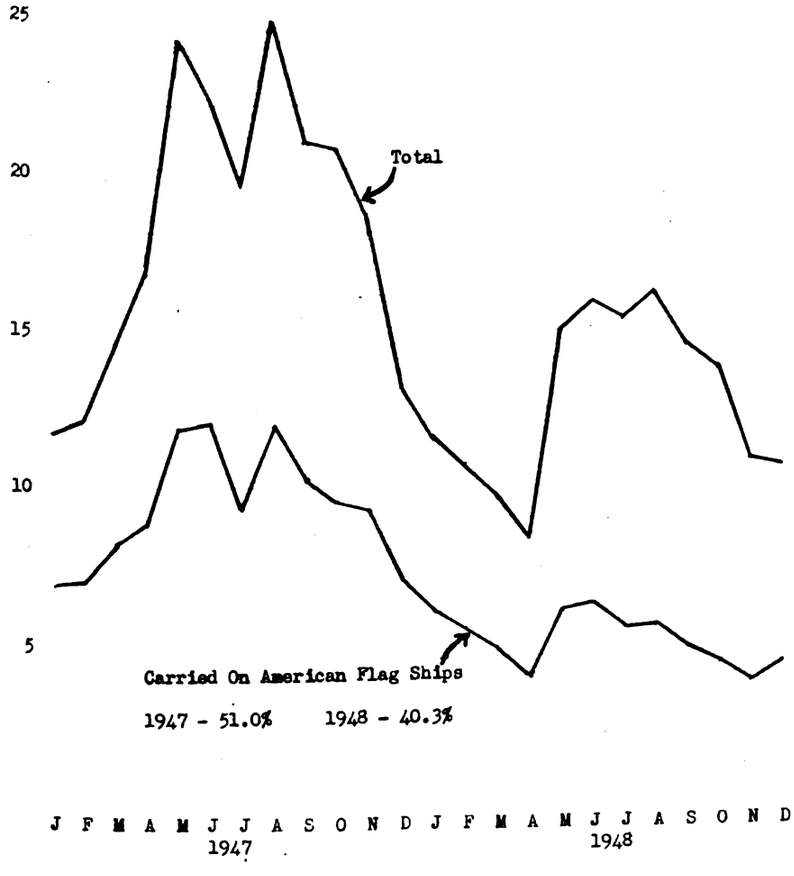
* Less than 50,000 tons.

Source: Reports (M.C. Forms 7801 and 7802 for vessels 1,000 gross tons and over) from vessel operators.

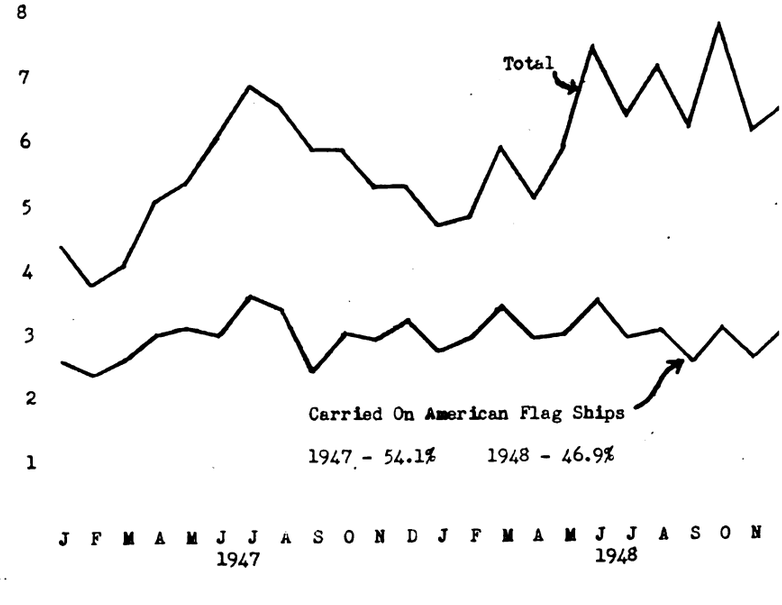
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WATER BORNE DRY CARGO EXPORTS OF THE UNITED STATES
(Millions of Pounds)



WATER BORNE DRY CARGO IMPORTS OF THE UNITED STATES
(Millions of Pounds)



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United States Dry Cargo Oceanborne Foreign Trade
Fiscal 1948 and Calendar 1938

(Millions of Tons of 2240 Pounds)

Service and Flag of Vessel	Total		Outbound		Inbound	
	1948	1938	1948	1938	1948	1938
Total Traffic	**100.5**	**44.1**	**74.7**	**23.5**	**25.8**	**20.6**
Military Cargo	8.1	....	8.0	....	0.1	....
Commercial Cargo	92.4	44.1	66.7	23.5	25.7	20.6
Commercial Total	**92.4**	**44.1**	**66.7**	**23.5**	**25.7**	**20.6**
U. S. Flag	51.6	11.6	36.3	5.5	15.3	6.1
For. Flag	40.8	32.5	30.4	18.0	10.4	14.5
Liner Cargo	**39.3**	**26.8**	**23.9**	**15.1**	**15.4**	**11.7**
U. S. Flag	23.1	9.7	13.3	5.3	9.8	4.4
For. Flag	16.2	17.1	10.6	9.8	5.6	7.3
Non-Liner Cargo	**53.1**	**17.3**	**42.8**	**8.4**	**10.3**	**8.9**
U. S. Flag	28.5	1.9	23.0	0.2	5.5	1.7
For. Flag	24.6	15.4	19.8	8.2	4.8	7.2

Note: Excludes traffic between U. S. Great Lakes ports and ports in Canada.
Source: Reports (M.C. Forms 7801 and 7802 for vessels 1000 gross tons and over) from vessel operators.

United States Dry Cargo Oceanborne Foreign Trade—Non-Liner Traffic
Fiscal 1948 and Calendar 1938

(Millions of Tons 2240 Pounds)

Service and Flag of Vessel	Total		Outbound		Inbound	
	1948	1938	1948	1938	1948	1938
Total Traffic	**59.9**	**17.3**	**49.5**	**8.4**	**10.4**	**8.9**
Military Cargo	6.8	....	6.7	....	0.1	....
Commercial Cargo	53.1	17.3	42.8	8.4	10.3	8.9
Commercial—Total	**53.1**	**17.3**	**42.8**	**8.4**	**10.3**	**8.9**
U. S. Flag	28.5	1.9	23.0	0.2	5.5	1.7
For. Flag	24.6	15.4	19.8	8.2	4.8	7.2
Tramp Vessels	**49.5**	**14.9**	**42.8**	**8.3**	**6.7**	**6.6**
U. S. Flag	26.6	0.7	23.0	0.2	3.6	0.5
For. Flag	22.9	14.2	19.8	8.1	3.1	6.1
Industrial Vessels[1]	**3.6**	**2.4**	*	**0.1**	**3.6**	**2.3**
U. S. Flag	1.9	1.2	*	*	1.9	1.2
For. Flag	1.7	1.2	*	0.1	1.7	1.1

Note: Excludes traffic between U. S. Great Lakes ports and ports in Canada.
* Less than 50,000 tons.
[1] Vessels engaged primarily in transporting cargo, such as iron ore, bauxite, gypsum, etc., for private account of industrial concerns. These vessels do not provide general cargo berth service, nor do they regularly engage in commercial charter or tramping operations.
Source: Reports (M.C. Forms 7801 and 7802 for vessels 1000 gross tons and over) from vessel operators.

United States Dry Cargo Oceanborne Foreign Trade—Commercial Traffic on Essential Trade Routes and Other Trade Routes—Fiscal 1948

(Millions of Tons of 2240 Pounds)

Commercial Traffic	Total		On Essential Trade Routes		On Other Trade Routes	
	Total	U.S. Flag	Total	U.S. Flag	Total	U.S. Flag
Total	**92.4**	**51.6**	**88.2**	**50.1**	**4.2**	**1.5**
Outbound	66.7	36.3	65.6	35.9	1.1	0.4
Inbound	25.7	15.3	22.6	14.2	3.1	1.1
Liner Cargo	**39.3**	**23.1**	**38.3**	**22.6**	**1.0**	**0.5**
Outbound	23.9	13.3	23.4	13.1	0.5	0.2
Inbound	15.4	9.8	14.9	9.5	0.5	0.3
Non-Liner Cargo	**53.1**	**28.5**	**49.9**	**27.5**	**3.2**	**1.0**
Outbound	42.8	23.0	42.2	22.8	0.6	0.2
Inbound	10.3	5.5	7.7	4.7	2.6	0.8

Note: Excludes traffic between U. S. Great Lakes ports and ports in Canada.
[2] A companion report prepared by the Trade Routes Branch in March, 1949 entitled "U. S. Flag Vessel Participation in Liner Traffic on Essential U. S. Foreign Trade Routes—Fiscal Year 1948—Calendar Year 1938" specifies each of the essential routes and gives detailed information concerning the individual routes.
Source: Reports (M.C. Forms 7801 and 7802 for vessels 1000 gross tons and over) from vessel operators.

The total tons of United States dry cargo oceanborne foreign traffic in 1948* amounted to 100.5 million tons which was two and one-quarter times the volume of the 1938 traffic which totaled 44.1 million tons. In 1948, 92.4 million tons was commercial (liner and non-liner) traffic and the remainder, 8.1 million tons, was military cargo which moved in vessels operated by steamship lines.[1] In 1938 there was no such category as military traffic. The non-liner traffic in 1948 amounted to 53.1 million tons which was well over half of the total dry cargo trade. In contrast, the non-liner traffic in 1938 totaled 17.3 million tons or about forty percent of the whole.

Both the tonnage of cargo and share of the traffic that moved under the United States flag were materially greater in 1948 than a decade earlier. For example, of the total 1948 commercial traffic of 92.4 million tons, 51.6 million tons or 56 percent was transported in U. S. flag vessels. In 1938, only 11.6 million tons or 26 percent of the total commercial traffic moved under the American flag. With respect to the *liner* portion of the commercial traffic, 59 percent of the 39.3 million tons of 1948 traffic moved in U. S. flag vessels, in contrast with 36 percent of the 26.8 million tons of 1938 traffic. As to the *non-liner* portion, 28.5 million tons or 54 percent of the 1948 total (of 53.1 million tons) moved in American bottoms, compared with a mere 1.9 million tons or 11 percent of the 1938 total which amounted to 17.3 million tons.

The quantity of dry cargo transported, expressed in millions of tons of 2240 pounds, for the two years under review, is summarized in the accompanying table which shows separately the tonnage carried outbound (from the United States), inbound, and the total.

The commercial *non-liner* traffic in both 1948 and 1938 consisted preponderately of carryings by tramp vessels and, to a minor extent, of carryings by industrial operators. The former in 1948 totaled 49.5 million tons and the latter 3.6 million tons. Similarly, in 1938 tramp carryings totaled 14.9 million tons and industrial carryings amounted to 2.4 million tons. In 1948, tramp carryings under the U. S. flag aggregated 26.6 million tons or 54 percent of the total tramp traffic of 49.5 million tons. Ten years earlier in 1938, tramp carryings under the U. S. flag came to only 0.7 million tons or less than 5 percent of the 14.9 million tons total.

Industrial carryings in U. S. flag vessels showed but little change in 1948 compared with 1938. In fiscal 1948 such carryings under the U. S. flag amounted to 1.9 million tons out of a total of 3.6 million tons, while in 1938 the U. S. flag share was 1.2 million tons of the 2.4 million tons

*Throughout this report 1948 means the fiscal year July 1, 1947—June 30, 1948.

[1] Cargo transported in vessels manned by the military is not included in this report and the volume of such traffic is not officially recorded by U. S. Government agencies as a part of United States foreign trade.

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United States Dry Cargo Oceanborne Foreign Trade

U. S. and Foreign Flag Carryings In Liner, Tramp, and Industrial Services—1st HALF FISCAL 1948

July 1, 1947 to Dec. 31, 1947

(Millions of Tons of 2240 Pounds)

Type of Cargo and Service of Carrier	Total			Outbound			Inbound		
	Total	U.S. Flag	For. Flag	Total	U.S. Flag	For. Flag	Total	U.S. Flag	For. Flag
GRAND TOTAL	57.9	35.4	22.5	45.5	27.7	17.8	12.4	7.7	4.7
I. Commercial Cargo	52.6	30.1	22.5	40.3	22.5	17.8	12.3	7.6	4.7
Liner Vessels	19.6	11.7	7.9	12.5	7.0	5.5	7.1	4.7	2.4
On Essential T.R.	19.1	11.4	7.7	12.2	6.9	5.3	6.9	4.5	2.4
On Other T.R.	0.5	0.3	0.2	0.3	0.1	0.2	0.2	0.2	*
Tramp Vessels	31.2	17.5	13.7	27.8	15.5	12.3	3.4	2.0	1.4
On Essential T.R.	30.2	17.0	13.2	27.4	15.4	12.0	2.8	1.6	1.2
On Other T.R.	1.0	0.5	0.5	0.4	0.1	0.3	0.6	0.4	0.2
Industrial Vessels	1.8	0.9	0.9	*	....	*	1.8	0.9	0.9
On Essential T.R.	0.8	0.7	0.1	....	....	....	0.8	0.7	0.1
On Other T.R.	1.0	0.2	0.8	*	....	*	1.0	0.2	0.8
II. Military Cargo	5.3	5.3	*	5.2	5.2	....	0.1	0.1	*
Liner Vessels	0.6	0.6	*	0.6	0.6	....	*	*	*
Tramp Vessels	4.7	4.7	....	4.6	4.6	....	0.1	0.1	...

Industrial Vessels (Included with Liners in II-Military Cargo).

Note: Excludes traffic between U. S. Great Lakes ports and ports in Canada.

* Less than 50,000 tons.

Source: Reports (M.C. Forms 7801 and 7802 for vessels 1,000 gross tons and over) from vessel operators.

Prepared in Trade Routes Branch
Division of Traffic

UNITED STATES MARITIME COMMISSION BUREAU OF GOVERNMENT AIDS

United States Dry Cargo Oceanborne Foreign Trade

U. S. and Foreign Flag Carryings In Liner, Tramp, and Industrial Services—2nd HALF FISCAL 1948

January 1, 1948 to June 30, 1948

(Millions of Tons of 2240 Pounds)

Type of Cargo and Service of Carrier	Total			Outbound			Inbound		
	Total	U.S. Flag	For. Flag	Total	U.S. Flag	For. Flag	Total	U.S. Flag	For. Flag
GRAND TOTAL	42.6	24.2	18.4	29.2	16.5	12.7	13.4	7.7	5.7
I. Commercial Cargo	39.8	21.5	18.3	26.4	13.8	12.6	13.4	7.7	5.7
Liner Vessels	19.7	11.4	8.3	11.4	6.3	5.1	8.3	5.1	3.2
On Essential T.R.	19.2	11.2	8.0	11.2	6.2	5.0	8.0	5.0	3.0
On Other T.R.	0.5	0.2	0.3	0.2	0.1	0.1	0.3	0.1	0.2
Tramp Vessels	18.3	9.1	9.2	15.0	7.5	7.5	3.3	1.6	1.7
On essential T.R.	17.8	8.8	9.0	14.8	7.4	7.4	3.0	1.4	1.6
On Other T.R.	0.5	0.3	0.2	0.2	0.1	0.1	0.3	0.2	0.1
Industrial Vessels	1.8	1.0	0.8	*	*	*	1.8	1.0	0.8
On Essential T.R.	1.1	1.0	0.1	*	*	*	1.1	1.0	0.1
On Other T.R.	0.7	....	0.7	....	....	....	0.7	...	0.7
II. Military Cargo	2.8	2.7	0.1	2.8	2.7	0.1	*	*	*
Liner Vessels	0.7	0.6	0.1	0.7	0.6	0.1	*	*	*
Tramp Vessels	2.1	2.1	*	2.1	2.1	....	*	*	*

Industrial Vessels (Included with Liners in II-Military Cargo).

Note: Excludes traffic between U. S. Great Lakes ports and ports in Canada.

* Less than 50,000 tons.

Source: Reports (M.C. Forms 7801 and 7802 for vessels 1,000 gross tons and over) from vessel operators.

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total industrial carryings. The accompanying table summarizes both tramp and industrial non-liner carryings, outbound and inbound, in U. S. flag and foreign flag vessels, for 1948 and 1938.

The extent to which the 1948 commercial cargo of 92.4 million tons moved on trade routes which have been declared essential by the Maritime Commission and on other trade routes has also been developed. In summary, it was found that 88.2 million tons or more than 95 percent of the total commercial cargo was carried on essential trade routes, and 50.1 million tons or 57 percent of the 88.2 million tons that moved on essential routes was transported in U. S. flag vessels. Of the 4.2 million tons of commercial cargo which moved on other than essential trade routes, 1.5 million tons was carried in U. S. flag vessels, and 2.7 million tons moved in foreign flag ships. The amount of commercial cargo carried in 1948 on essential trade routes and other trade routes, outbound and inbound, and the portion transported under the U. S. flag, is shown in summary in the accompanying table.

Further details regarding fiscal 1948 United States dry cargo foreign trade carryings are shown in four accompanying tables which indicate the number of tons transported during the last six months of 1947 and during the first six months of 1948 in U. S. flag vessels and in foreign flag vessels. The information also is segregated as to carryings of commercial cargo and military cargo in liner vessels and non-liner vessels, on essential trade routes and on other trade routes.



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AGE DRY CARGO AND COMBINATION FLEET

(U. S. Flag Privately Owned)

	1931 or Before	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	Total
Actium Shipping Corp.														1						1
Alaska Steamship Co.	5											1			1					7
Alaska Transportation Co.	1									1										2
Albatross S/S Co., Inc.													1	1						2
Alcoa S/S Company, Inc.											3	1	6	2	1		3			16
American Eastern Corp.														1						1
American Export Lines, Inc.									1	3	2	3	2	6	5	2				24
American Foreign S/S Corp.													1	3						4
American Gulf S/S Co.	1																			1
American-Hawaiian S/S Co.	2																			2
American Mail Line, Ltd.											2	1	1	2	3					9
American Pacific S/S Co.														1						1
American President Lines										1	1		3	2	5	3				15
American S/S Co.	1																			1
American Trans-Ocean Nav. Co.													1							1
Arrow Steamship Co., Inc.												1	1							2
Atlantic Cargo Carriers													1							1
Aurora Steamship Co., Inc.													1							1
Baltimore Insular Line, Inc.												2								2
Black Diamond															1					1
Blidberg Rothchild Co., Inc.													1							1
Buckeye Steamship Co., Inc.	2																			2
Bulk Carriers Corp.														1						1
Bull, A. H. S/S Co.	8											2	1	5	4	1				21
Burns Steamship Co.	1																			1
Calmar S/S Corp.														8		1				9
Carlip, Philip													1							1
Central Gulf Corp.														1						1
Clifton S/S Corp.												1								1
Consolidated Ocean Carriers Corp.												1								1
Coral Steamship Corp.															1					1
Dichman, Wright & Pugh, Inc.														1						1
Dolphin Steamship Corp.														2						2
Dover Steamship Co., Inc.														1						1
Drytrans, Inc.														1						1
East Harbor Trading Corp.													1	1						2
Eastern Steamship Lines, Inc.	2	1																		3
Eastport Steamship Corp.							1													1
Edison Steamship Corp.															1					1
Empire Motorship Corp.	1																			1
Erie & St. Lawrence Corp.							1			1										2
Fall River Navigation Co.					1															1
Fanmaur Shipping & Trading Corp.					1															1
Farrell Lines										2		2		5	1	4	2			16
Firth S/S Company, Inc.													1							1
General Freighting & Brokerage Corp.														1						1
Grace Line, Inc.		2								2		2	1	7		8	1			23
Gulf Canal Lines													1							1
Gulf & South American S/S Co., Inc.													1	3						4
Illinois-Atlantic Corp.	1																			1
Inter-Island Steam Nav. Co.	2																			2
Isbrandtsen S/S Co., Inc.														5	2					7
Island Dock Company	1																			1
Isthmian S/S Co.	6												5	9	10					30
The Lerner Company	1																			1
Luckenbach S/S Co.	5												7	8	1					21
Lykes Bros. S/S Co., Inc.										5	1		5	15	24	1				51
Marine S/S Corp.													1							1
Mar Ancha Corp.												1								1
Marine Transport Co.													1	3						4
Martinloch, S. B. Company														1						1
Matson Navigation Co.	1	1											1	9	8					20
Mississippi Shipping Co., Inc.												3	1	7		1	2			14
Moore-McCormack Lines, Inc.										3	5	2	4	7	6	6	1			34
Morris, Rueben								1												1
Mount Steamship Corp.													1	2						3
Mystic Steamship Division (Eastern Gas and Fuel Association)	2														12					14
National Bulk Carriers											1	1	3							5
N. York & Cuba Mail S/S Co.													2	3						5
Newport News Shipbuilding & Dry Dock Co.													1							1
North American Shipping and Trading Co., Inc.														1						1
Northeastern S/S Company													1		1					2
Ocean Freighting & Brokerage Corp.													1							1
Ocean S/S Company of Savannah														2						2
Ocean Tramp Carriers, Inc.													1							1
Oceanic Steamship Co., Inc.	1	1												4						6
Olson Oliver J., Co.	6																			6
Olympic S/S Co., Inc.														1						1
Ore S/S Corp.	5														1	2	1	3		12
Oro Navigation														1						1
Owens Park Lumber Co., Inc.	2																			2
Pacific-Argentine Brazil Line													1	2	1					4
Pacific-Atlantic S/S Co.													1		3					4
Pacific Far East Line														5						5
Pacific Transport Lines, Inc.											1		1	1	2					5
Pan Atlantic S/S Corp.														2	2					4
Pan Oceanic S/S Corp.														1						1
Peninsular & Occidental S/S Corp.	1																			1
Permanente S/S Co.	1													1						2
Pheonix Steamship Co.													2							2
Pocahontas S/S Co., Inc.	6														1					7
Polarus Steamship Co., Inc.													1	3						4
Ponce Cement Corp.																1				1
Pope & Talbot, Inc.															3					3
Pratt S/S Line	1																			1
Prudential S/S Corp.	1												1	1						3
Santa Cruz Portland Cement Co.	1																			1
Schaffer Bros. S/S Lines, Inc.	1																			1
Seafarer S/S Corp.														1						1
Seatrade Corp.				1				1	1											3
Seatrain Lines, Inc.	1	2								2										5
Seas Shipping Co., Inc.											6		4		2					12
Seven Seas Shipping Co.													2							2
Shephard S/S Co.									1	1			2							4
Smith & Johnson														1						1
South Atlantic S/S Line, Inc.														4						4
Southern Steamship Company															1					1
Southern Trading Company												2	1							3
Sprague S/S Company	1												1	3	3					8
Sword Line, Inc.	2												1	1	1	2				7
St. Lawrence Nav. Co.															1					1
Standard S/S Company															1					1
State Cargo Carriers Corp.														1	1					2

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AGE DRY CARGO AND COMBINATION FLEET—Continued
(U. S. Flag Privately Owned)

	1931 or Before	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	Total
States Marine Corp.														7	4	4				15
States Steamship Co.														3	2					5
Stone S/S Co.														2						2
Tracy, M. & J., Inc.															2					2
Tramar Shipping Co., Inc.													1							1
Union Sulphur Company												2	1							3
United Fruit & Affiliates	1	4	1								1		1	1	8	1	8	4		30
U. S. Lines Company										1			8	4	26	8				47
Warren Maritime Corp.														1						1
Waterman S/S Corp.												5	19	9	4	4				41
Wessel-Duval & Co., Inc.														1						1
West Coast Trans Oceanic S/S Line														2	1					3
Welding Shipyards, Inc.	1																			1
West India S/S Co.														1						1
Weyerhaeuser S/S Co.													1	5						6
White Range S/S Co.														1						1
Wilkinsen, J. J., Jr.								1												1
Wood, E. K. Lumber Co.	1																			1
Wilmore S/S Co.	1														1					2
Total	77	11	1	1	2	0	2	3	3	22	23	33	110	198	158	49	18	7	0	718

Report on Dry Cargo Liner Traffic

(Continued from Page 79)

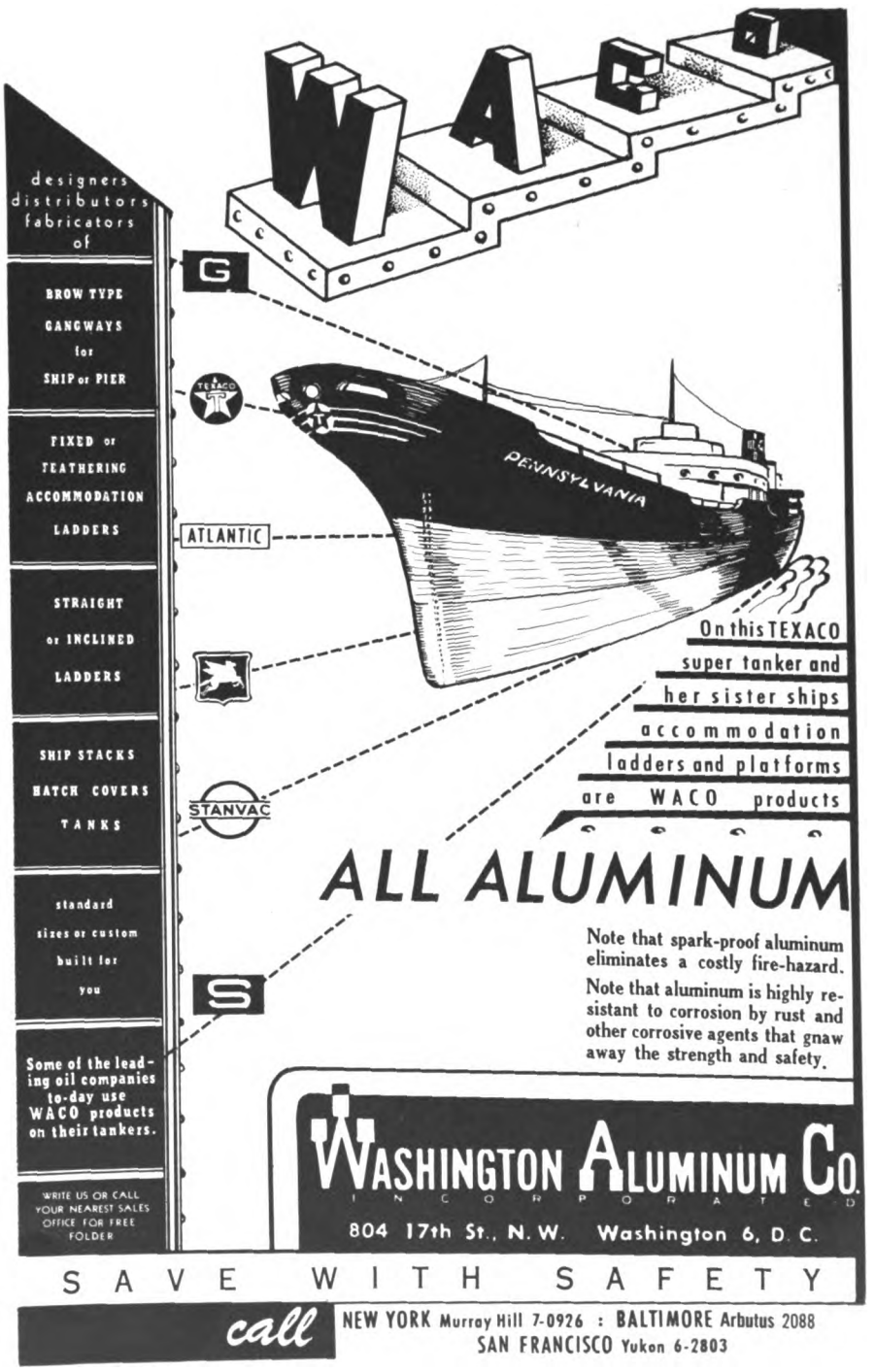
Of the ten routes with less than ½ million tons each in 1938, seven routes (3, 15-B, 23, 24, 27, 28, 31) remained in 1948. These seven routes plus six routes (7, 11, 22, 26-A, 26-B, and 30) which dropped into Group III from the "½ to 1 million ton" group brought the 1948 total to 13 routes.

Traffic by Foreign Trade Areas

Operations on essential trade routes during the periods under review fell into eight foreign trade areas, as shown in Chart No. 5 and the table on page 79 which summarizes total (outbound and inbound) liner traffic in U. S. and foreign flag vessels and shows the share obtained by U. S. flag vessels:

Comparison of the volume of liner traffic moving between United States and the eight major foreign trade areas (see Chart No. 5) in 1948 and in 1938 shows two shifts of importance. Of all eight areas. the European and Caribbean areas ranked first and second, respectively, in 1948; in 1938, their positions were exactly reversed. The South American and Far East areas which ranked third and fourth, respectively, in 1948 had also reversed their relative prewar positions. The other areas—South Asian, Mediterranean, African and Australasian—ranked fifth, sixth, seventh and eighth, respectively, in 1948 and in 1938. Two areas—Caribbean and European—in 1948 had traffic in excess of 9 million tons. In 1938 the European area was the only one where the traffic exceeded 9 million tons.

Most areas showed substantially greater participation by U. S. flag vessels in 1948, with percentages ranging from 72.4 percent in the Caribbean area down to 30.8 percent in the Australasian area. In 1938 the African area was high with a percentage of 62.6 and the South Asian area low with 17.3 percent.



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AGE TANKER FLEET

	1931 or Before	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	'49	Total
American Oil Company						2														2
American Eastern Corp.													1							1
American-Pacific S/S Co.													1	1						2
American Marine Corp.													1	2						3
American Trdg. & Prod. Corp.														1	3					4
American Viking Corp.													1		1					2
Allied-Ashland Tankers													2							2
Atlantic Refining								1	1	1	2		2		6					13
Anchor Oil Company														1						1
Amtron Tanker Corp.													1							1
Artic Tankers, Inc.													1							1
American Tramp Shpg. Develop. Corp.													1							1
American-Republics Corp.														2						2
Bernuth Lembcke Co., Inc.								1					2	1	1					5
Busley, Ira S. & Sons, Inc.																	1			1
California Oil Co.														1	2					3
Caras, J. M. & Co.													1	1	1					3
Cape Horn Shipping Corp.															1					1
Cities Service Oil Co.												1	1	3	9					14
Coastwise Bulk Carriers, Inc.													2							2
Coastal Oil Company													1							1
Collins, John K.	1																			1
Colonial Navigation													1							1
Conoco Marine															1					1
Continental Oil Co.												1			1					2
Continential S/S Co.													1							1
Cuba Distilling Co.													2							2
East Harbor Trading Corp.													1							1
Eastport Steamship													1							1
Edison Steamship													1							1
Epiphany Tankers Corp.													1							1
First National Oil Corp.													1							1
Flanigan Loveland													1							1
Federal Motorship Corp.	1												1							2
Gulf Oil Corp.	13			1			3	1				3	7	9	7				1	45
Harcon Steamship Co.													1							1
Hess, Inc.													1							1
Hillcone Steamship Co.	2												1							3
Independent Tankships, Inc.													5	1						6
Inter-Continental S/S Corp.													1	1						2
Irving S/S Corp.														1						1
Jenny Manufacturing Co.													1							1
Keystone Shipping Co.													2							2
Keystone Tankship Corp.												5		1						6
Kurs, Chas. & Co.													4	1						5
Lake Tankers Corp.													1							1
Manning Bros.													1							1
Mariner S/S Co., Inc.	1																			1
Maris Trans. System, Inc.													1							1
Mathiasen Tankers Ind., Inc.														1						1
Martrade Corp.	1																			1
Metro Petroleum Shipping Co.													2							2
Moore-McCormack													1							1
Muskogee Steamship Corp.						1														1
National Bulk Carriers, Inc.												1	7	10	7					25
National Tankers Corp.														2						2
Nautilus Shipping Corp.															1					1
N. American Shpg. & Trdg. Co., Inc.													1	2	3					6
Ocean Tankers Corp.													2							2
Oil Transfer Corp.														2			1			3
Pacific Tankers														2						2
Paco Tankers, Inc.													8							8
Palmer Shipbuilding Corp.													1							1
Paragon Oil Co., Inc.													2							2
Pan-American Pet. & Trans. Co.						2		1			1		2		2					8
Petrol, Tanker Industries, Inc.													1	1						2
Philadelphia Marine Corp.													1							1
Polarus Steamship Co.													1							1
Pure Oil Steamship Co.															1					1
Richfield Oil Company											1	1	1		1					4
Sabine Transportation Co.	2					1						2	1	1	1					8
Ships, Inc.															2					2
Sinclair Refining Co.	3										5	4	1							13
Socony Vacuum Oil Co.					2		1		2			3	10	2	1					21
Southern Trading Company														3	3					6
Southeastern Oil Co.													3		1					4
Southeastern Tankers, Inc.													1							1
Standard Oil of California	3						1			1			2	2	4	2				15
Standard Oil Company (Indiana)													1	1						2
Stanolind Marine Transport Co.													2							2
Standard Oil Co. of New Jersey	4						4	1		5	2	11	8	16	3			1	2	57
Stockard Steamship Company													1							1
Standard Vacuum Oil Co.														5						5
Star and Crescent Boat Company													1							1
Stevenson, T. J. & Company, Inc.													2							2
Sun Oil	10						1	1		1		2	3	5	1					24
State Fuel Company															1					1
Strathmore Shipbuilding Co.													1							1
Sword Line, Inc.														1						1
Tanker Four Lakes, Inc.														1						1
Tanker Sag Harbor Corp.														1						1
Texas Company	6						2					2	8	9	1					28
Terminal Tanker Industries													1							1
Tidewater Assoc. Oil Company	12							1			1			6	2					22
Tramp Shpg. & Oil Trans. Corp.														1						1
Transfuel Corp.													1							1
Trinidad Corp.												1		2	6					9
Tini Steamship Corp.													1							1
Union Sulphur													2							2
U. S. Navigation Co.													1							1
U. S. Petroleum Carriers, Inc.													3	1						4
Union Oil Company of California									1	1	2				3					7
U. S. Waterways Corp.													1							1
Ventura S/S Corp.															1					1
Windsor Navigation Co.													2							2
World Wide Tanker													1							1
TOTAL	59	0	0	1	2	6	12	7	4	9	14	37	143	104	78	2	2	2	2	484

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USMC REPORT ON DOMESTIC

TANKER TRAFFIC

For the first time here is an analysis of tanker traffic in U.S. domestic trade prepared by the Trade Routes branch of the Maritime Commission.

The Maritime Commission has completed and herewith presents in summarized form the results of a detailed traffic analysis covering each trip of each tankship engaged in United States domestic commerce in 1947. No such analysis has heretofore been available although the petroleum industry and government agencies interested in the transportation of petroleum and other products carried in tankships have long recognized the need for such data. Operations of tankers by or under the control of the U. S. Army and Navy are not included in this report.

The analysis was made possible through the close cooperation of Armed Services Petroleum Board personnel working with the Trade Routes Branch, Research Division, of the Maritime Commission, utilizing data from reports submitted by tankship operators to the Board of Engineers for Rivers and Harbors, Department of the Army, for each voyage made during the calendar year 1947. A companion analysis covering United States foreign trade tankship traffic for 1947 is in course of preparation and is scheduled for release in the near future.

The total traffic of commodities carried in tankships in U. S. domestic trade in 1947 amounted to 120 million short tons (or 813 million barrels), which was about one million tons more than the total dry cargo foreign commerce of the United States in that year. Nearly 63 percent of the total tankship tonnage moved from U. S. Gulf ports to ports on the Atlantic coast, about 17 percent moved between Pacific coast ports, slightly less than 11 percent moved between U. S. Great Lakes ports and about six percent moved between Gulf ports. Tankship traffic from the mainland to Alaska, Hawaii, and Puerto Rico totalled 1.4 million tons, while carryings in the reverse direction were negligible. Carryings between and within districts are summarized in the accompanying table.

This table shows clearly that the great majority of tankship traffic moved from U. S. Gulf ports to U. S. Atlantic ports, the remainder being confined almost entirely to movements along the Pacific coast, along the Gulf coast, and on the Great Lakes. In other words, tankship traffic between districts of continental United States excluding the Gulf-Atlantic coast movement amounted to only .81 million tons or less than one percent of the total traffic.

The tremendous volume of the 1947 domestic tankship traffic may be visualized by comparison with United States dry cargo vessel overseas traffic which in 1947 (the greatest peacetime year ever recorded) amounted to 119 million short tons. The same year revenue freight traffic originating on all Class I railroads of the United States amounted to 1538 million short tons and the rail revenue ton-miles handled amounted to 655 billion ton-miles. A rough computation based on the above summary statement of tankship carryings indicates that domestic tankship traffic for 1947 amounted to approximately 190 billion ton-miles (statute miles of 5,280 feet) or nearly one-third of the railroad figure.

The Commission in its 1947 domestic tankship traffic analysis also summarized the tonnage of the principal commodities carried between and within U. S. districts, namely: crude oil, gasoline, kerosene, fuel oils, and miscellaneous products (which include lubricating oils, greases, alcohols, molasses, syrups, and unfinished oils and topped crude intended for further processing). *Crude oil* shipments totalled 44.4 million tons of which 33.3 million tons (75 percent) moved from the Gulf area to Atlantic ports and 8.4 million tons (19 percent) moved Pacific coastwise. *Gasoline* shipments amounted to 32.3 million tons of which 45 percent was from the Gulf to the Atlantic coast, 31 percent moved in the Great Lakes area, 14 percent moved on the Pacific coast and 7 percent moved along the Gulf coast. *Kerosene* shipments totalled 5.3 million tons, 83 percent being transported from the Gulf to the Atlantic seaboard. Total shipments of *Fuel Oils* slightly exceeded gasoline and amounted to 34.6 million tons of which 59 percent moved from Gulf to Atlantic ports, 21 percent moved Pacific coastwise and 8 percent was transported on the Great Lakes. *Miscellaneous* products totalled 3.9 million tons with 72 percent moving from the Gulf to the Atlantic coast, 11 percent on the Pacific coast, and about 6 percent along the Atlantic seaboard. The principal commodity movements are summarized in the table below.

Inbound and outbound tankship traffic movements between districts in 1947 showed great variations, reflecting the one-way movement of most tankship commodities with return voyages principally in ballast. The lack of balance in tankship traffic is indicated in the following tabulation on page 95.

Even within individual districts such as (*Continued on Page 95*)

Tankship Carryings Between and Within U. S. Districts—Calendar Year 1947

(Millions of Tons of 2,000 Pounds)

From \ To	Atl. Coast	Gulf Coast	Pac. Coast	Great Lakes	Alaska	Hawaii	Puerto Rico
Atl. Coast	1.96	.62	.....	.01	.....	.....	.....
Gulf Coast	75.39	6.92	.07	.....	.....	.02	.05
Pac. Coast	.10	.01	21.02	.....	.38	.93	.....
Great Lakes	.....	.....	.....	12.91	.....	.....	.....
Alaska	.....	.....	.....	.....	.....	.....	.....
Hawaii	.....	.....	.05	.....	.....	.....	.....
Puerto Rico	.02	.....	.....	.....	.....	.....	.....
Total	77.47	7.55	21.14	12.92	.38	.95	.05

Grand total, 120.45 million tons of 812.82 million barrels (of 42 U. S. gal.)

Tankship Carryings of Principal Commodities by U. S. Districts—Calendar Year 1947

(Millions of Tons of 2,000 Pounds)

Item	Crude Oil	Gasoline	Kerosene	Fuel Oils	Miscellan.
Gulf to Atlantic	33.3	14.4	4.4	20.5	2.8
Atl. Coastwise	.....	.6	.3	.8	.2
Gulf Coastwise	2.4	2.3	.3	1.8	.1
Pac. Coastwise	8.4	4.6	.2	7.4	.4
Great Lakes	.....	9.9	.1	2.9	.....
Pac. Coast to Alaska	.....	.1	.....	.3	.....
Pac. Coast to Hawaii	.....	.2	.....	.7	.....
Other movements	.3	.2	.....	.2	.4
Total	44.4	32.3	5.3	34.6	3.9

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ANALYSIS OF THE WORLD

TANKER FLEETS

A comprehensive and detailed study of the world's tanker fleets.

By BENEDICT SAURINO
Manager, Statistical Research Division
Sun Oil Company

Inventory

In actual terms, world tank ship fleets on January 1, 1949, aggregated 1,872 vessels of 15,459,372 tons gross, having a deadweight of 23,815,800 tons with an average speed of 13.0 knots. In terms of T2-SE-A1 equivalents, for the conversion of which there have been utilized factors of 16,765 deadweight tons and 14.5 knots speed, the world fleets amounted to 1,274.4 T2's.

Using this national tanker as a base, world fleets have increased nominally by approximately 10 T2's and less than 1% since the end of the war, but a substantial capacity increase of nearly 500 T2's and 64.3% has occurred since September 1, 1939, just prior to World War II.

Although on net balance total world capacity has shown little change since September 1, 1945, there has been a considerable shift in the flag registry of these fleets. Vessels flying the American flag have reduced their capacity by more than 30% since the end of the war, while ships under Panamanian registry show an increase of 229%. Of the major foreign fleets, ships registered under the British Empire flags have increased their capacity by 41.7%, with the Norwegian vessels showing a 32.2% larger capacity, and all other registries combined indicate an increase of nearly 25%. The registry shift, therefore, has been effectuated by a severe reduction of the American flag, counterbalanced almost exactly by the magnitude of increase in foreign flag ships. This condition is not surprising due to the fact the United States was the largest single constructor and owner nation of tankships during World War II.

Although this experience has occurred since the end of the War, there has been a different pattern of capacity ownership established in comparison with the prewar fleet distribution. Since September 1, 1939, tankships flying the American flag have increased in capacity by approximately 183%, or the equivalent of 339 T2's. Panamanian registered vessels, largely owned by American citizens, have expanded to a level more than three and one-half times their prewar capacity. Ships under the British Empire flags show a capacity 23.5% greater, while Norway is the only major fleet owner which has not regained its prewar capacity. The Norwegian fleet currently shows a decline of 7.4%, or the equivalent of slightly more than 11 T2's as compared to the prewar period. All other nations of the world have gained 16.8% in their tankship carrying capacity.

Positionally, there has been a considerable change in the proportions of world tankers registered under various flags. At present, the United States is first with slightly more than 41% of the world tonnage, while the British Empire is second with about 21% and Norway is third with 11% of world capacity. At the beginning of the war, the United States was second to Great Britain and had only 23.9% of the world's tanker capacity, while Britain had more than 28%, Norway being third with 19.5%. On balance, therefore, the United States flag has gained a positional increase of 72%, while the British Empire shows a loss of 25% in world fleet position, and the Norwegian flag has lost nearly one-half of the positional advantage it enjoyed prewar.

A further comparison of relative magnitudes of world fleets is indicated by the fact that at the end of the war, the United States fleet had nearly 60% of the world capacity, while Great Britain had been reduced by war losses to 15%, and Norway accounted for only 8.4% of world capacity.

Size and Speed Distribution

In analyzing the present fleet for size and speed, it is found that the influence of T2's, with an average of 14.5 knots speed, far outweighs the total of the other three largest speed groups. For example, in the 14 knot group there are the equivalent of 548 T2's, while in the 10, 11 and 12 knot groups there are only 479 T2 equivalents. It is significant that 44.9% of the present world capacity represents vessels under 14 knots, while 43% of the total fleets is in the 14.0 to 14.9 speed group, and only 12.1% is in the 15 knot and over category.

The influence of T2 construction also affects the size distribution of these vessels. In the 16,000 ton group alone there are represented approximately 560 T2 equivalents. This same comparison shows that 45.6% of the present fleets are under 16,000 deadweight tons, 44.0% in the 16,000 to 16,999 deadweight ton group, and 10.4% in the 17,000 deadweight and over classification.

Age Distribution

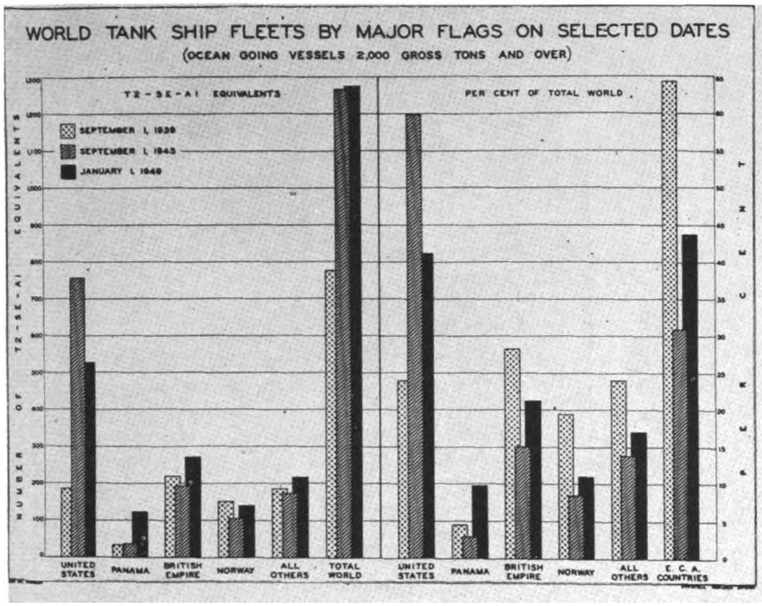
The need for meeting the military tanker needs during the war will probably have its severest impact upon the future construction pattern of tanker replacements for years to come. This problem is pointed out most clearly by an analysis of the age distribution of the present fleet.

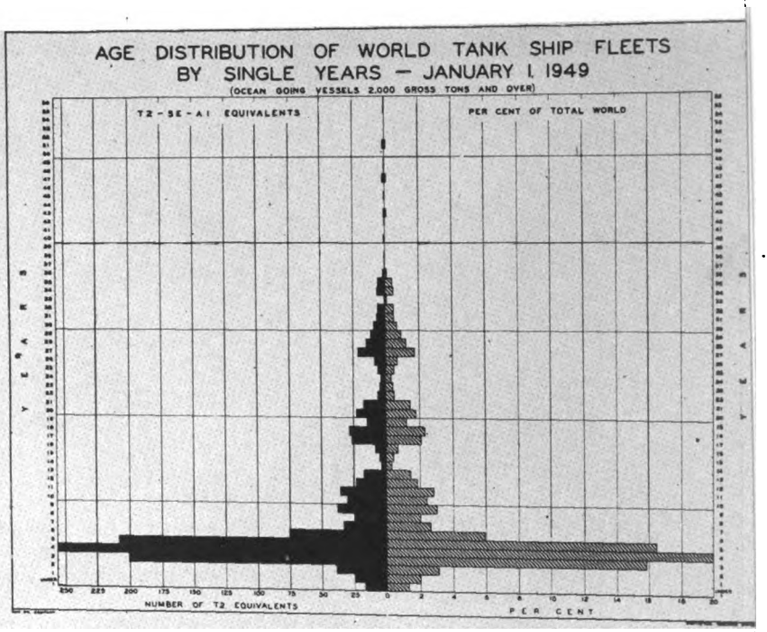
ESTIMATED WORLD TANK SHIP FLEET FOR YEARS ENDING 1948 TO 1952
(Ocean-Going Vessels 2,000 Gross Tons and Over)

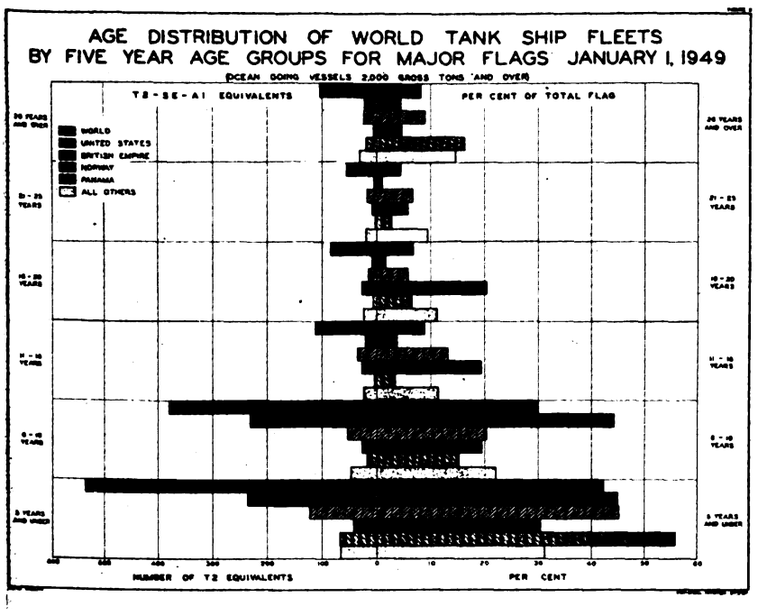
	Cumulative New Construction From September 1, 1948			World Fleet at End of Period					
				No Allowance For Scrappage of Overage Vessel			Full Allowance For Scrappage of Vessels Over 20 Years		
	Actual		T2-SE-A1	Actual		T2-SE-A1	Actual		T2-SE-A1
	No.	D. W. T.	Equiv.	No.	D. W. T.	Equiv.	No.	D. W. T.	Equiv.
Mos., 1948	71	1,006,850	57.4	1,942	24,792,650	1,329.8	1,521	21,003,850	1,169.7
1949	174	2,869,480	169.0	2,045	26,655,280	1,441.4	1,592	22,528,180	1,266.2
1950	285	4,960,180	296.0	2,156	28,745,980	1,568.4	1,654	24,000,380	1,364.3
1951	393	6,707,380	394.7	2,264	30,493,180	1,667.1	1,713	25,166,480	1,436.3
1952	440	7,453,080	435.8	2,311	31,238,880	1,708.2	1,744	25,726,580	1,468.6

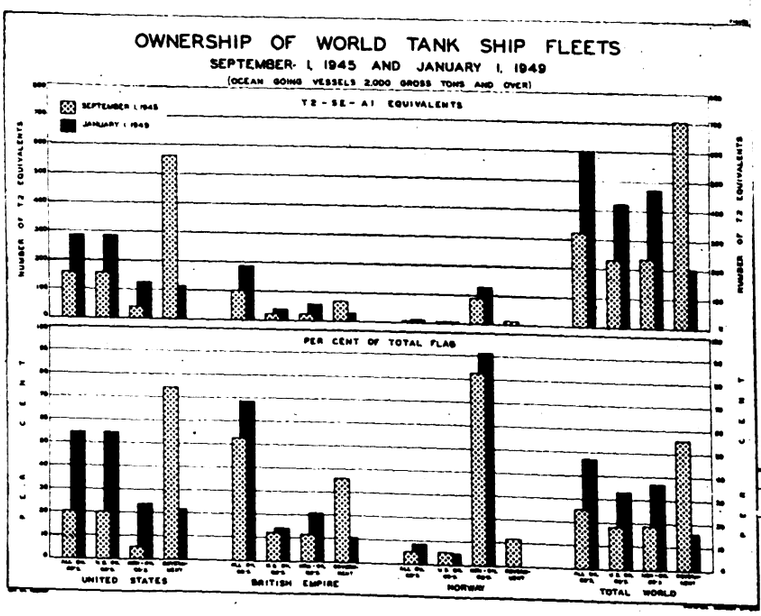
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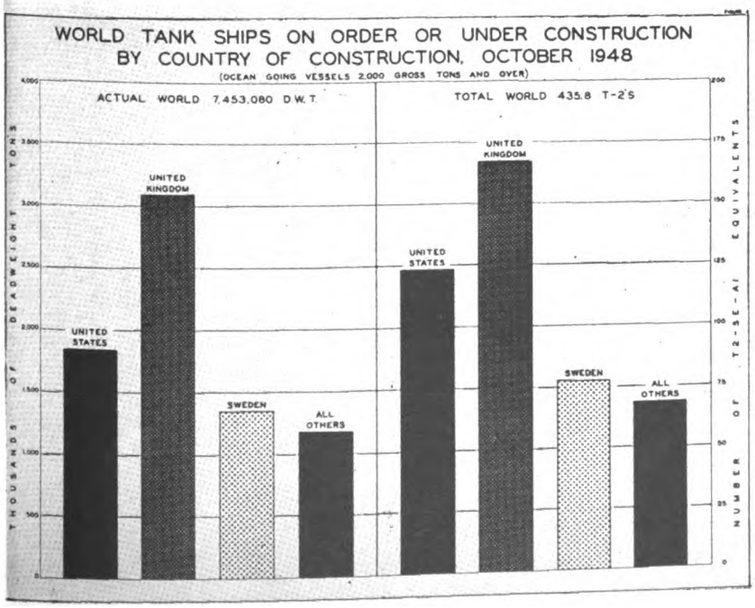
WORLD TANK SHIP FLEETS

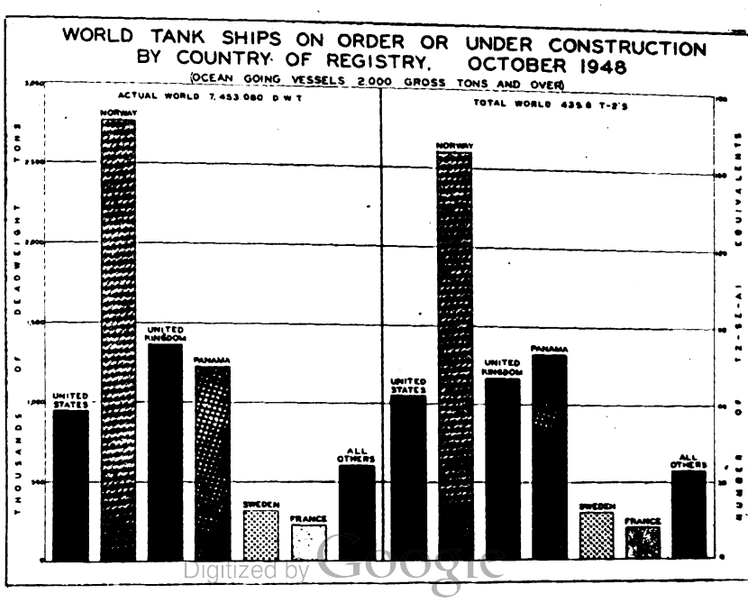












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WORLD TANK SHIP FLEETS BY FLAG, ACTUAL AND T2-SE-A1 EQUIVALENTS
AS OF JANUARY 1, 1949
Ocean-Going Vessels 2,000 Gross Tons and Over

(Source: U. S. Maritime Commission)

Flag	Actual				T2-SE-A1 Equivalent		
	No.	Gross Tons	D.W.T.	Average Speed	No.	D.W.T.	As % Of World
WESTERN HEMISPHERE							
United States	593	5,656,497	9,016,200	14.1 K.	524.2	8,788,200	41.1%
Government	117	1,151,533	1,816,900	15.2	113.5	1,902,800	8.9
U.S.M.C.	21	137,562	205,000	11.2	9.4	157,600	0.7
Military	96	1,013,971	1,611,900	15.7	104.1	1,745,200	8.2
Private	476	4,504,964	7,199,300	13.9	410.7	6,885,400	32.2
Oil Companies	329	3,119,778	5,006,700	13.9	285.4	4,784,700	22.4
Non-Oil Companies	147	1,385,186	2,192,600	13.9	125.3	2,100,700	9.8
Panama	175	1,450,220	2,310,900	13.0	123.1	2,063,800	9.7
U. S. Citizen	141	1,234,388	1,978,000	13.3	107.9	1,808,900	8.5
Canada	22	159,223	241,600	13.4	13.3	223,000	1.0
Others:							
Argentina	29	175,634	245,200	11.7	11.5	192,800	0.9
Brazil	5	30,077	44,000	10.2	1.8	30,200	0.2
Chile	2	7,586	9,600	11.0	0.4	6,700	0.0
Honduras	2	14,071	21,000	11.3	1.0	16,800	0.1
Mexico	13	81,080	129,800	10.5	5.6	93,900	0.4
Peru	1	2,820	4,300	10.0	0.2	3,300	0.0
Philippines	-	-	-	-	-	-	-
Uruguay	2	20,592	33,600	14.5	2.0	33,500	0.2
Venezuela	28	83,911	116,700	9.6	4.6	77,100	0.4
Sub-Total	82	415,771	604,200	10.9	27.1	454,300	2.2
TOTAL WESTERN HEMISPHERE (incl. Canada & Philippines)	872	7,681,711	12,172,900	13.7	687.7	11,529,300	54.0
EUROPE							
E.C.A. Countries	938	7,354,762	11,026,300	12.3	557.1	9,339,800	43.7
Belgium	5	38,937	58,500	12.2	2.9	48,600	0.2
Denmark	15	129,038	201,100	11.8	9.8	164,300	0.8
France	51	455,199	698,500	13.0	37.3	625,400	2.9
Germany	1	5,897	9,200	9.0	0.3	5,000	0.0
Greece	11	94,077	149,100	13.5	8.3	139,200	0.6
Italy	62	481,057	745,400	12.7	39.1	655,500	3.1
Netherlands	91	475,889	665,600	11.5	31.4	526,400	2.5
Norway	208	1,804,481	2,742,000	12.4	139.7	2,342,100	11.0
Portugal	6	36,741	59,100	11.9	2.9	48,600	0.2
Sweden	36	329,944	506,200	13.5	28.1	471,100	2.2
Switzerland	2	11,571	17,900	10.3	0.8	13,400	0.1
Turkey	3	19,844	30,000	13.7	1.7	28,500	0.1
United Kingdom	447	3,472,087	5,143,700	12.0	254.8	4,271,700	20.0
Others:							
U.S.S.R.	19	116,632	175,900	10.9	7.9	132,400	0.6
Spain	21	128,979	176,600	11.4	8.3	139,200	0.7
Yugoslavia	1	6,074	9,400	11.5	0.4	6,700	0.0
Finland	5	38,632	59,000	10.6	2.6	43,600	0.2
Poland	1	6,487	9,300	10.5	0.4	6,700	0.0
Sub-Total	47	296,804	430,200	11.1	19.6	328,600	1.5
TOTAL EUROPE	985	7,651,566	11,456,500	12.2	576.7	9,668,400	45.2
JAPAN	7	60,485	85,900	13.3	4.7	78,800	0.4
CHINA	5	41,089	61,500	12.3	3.1	52,000	0.2
UNION OF SOUTH AFRICA	2	21,130	33,600	14.5	2.0	33,500	0.2
INDIA	1	3,391	5,400	8.0	0.2	3,300	0.0
TOTAL WORLD FLEETS	1,872	15,459,372	23,815,800	13.0	1,274.4	21,365,300	100.0
TOTAL BRITISH EMPIRE	472	3,655,831	5,424,300	12.1	270.3	4,531,500	21.2

In actual operation today, there are the equivalent of 99 T2's which are 26 years or more of age. This group continues to reflect the impact of World War I when the War Shipping Board program was in effect. For example, these 99 T2 equivalents represent 250 actual vessels of which 195 were constructed during the war and postwar years of 1915 to 1922, inclusive, and the remaining 55 still in operation today were constructed prior to 1915. The oldest vessel has a construction date of 1892 and is, therefore, 56 years old.

While the economics of tanker operations depend not only upon the condition and age of a vessel, but also upon the going charter hire rates, it is evident that the age distribution of the present fleet must be considered for the long-range planning essential in efficient fleet operation. The present fleet as currently constituted, has 8.1% of its capacity which is 26 years of age and over. Between 11 and 25 years, there is only 19.8%, while under 10 years of age we have 72.1%. Further, more than 42% of the world capacity is under 5 years of age due to the World War II program.

Thinking in terms of a 20-year life for a tanker, it is obvious that the age distribution of an individual fleet would be most economically represented in terms of an even 5% distribution per year. This would facilitate both replacement and expansion plans for individual fleets.

As against this hypothesis it should be pointed out that 16.4% of the present capacity world-wide was constructed in the year 1943, 20.0% in 1944, and 15.8% in 1945. In total, more than half (52%) of the present world capacity was constructed in those three years. World fleet owners are faced with a real problem in planning to equalize the age of their vessels to make up for this capacity twenty years hence, or in the years 1963-1965, inclusive.

The problem presented by age distribution distortions due to the impacts of both world wars should be faced by all major fleet owners on the basis of these incontrovertible facts. The United States tanker operators are affected to a greater degree than other tanker fleet owners by this problem in that nearly 45% of the American fleet is under 5 years of age, while 56% of the Panamanian flag vessels are in this age group. The nation least affected by a distorted age distribution is Norway which has nearly 93% of its fleet twenty years of age and under and only 30% of its present capacity in the under 5 years group.

Ownership

A growing importance is also attached to the world ownership distribution by broad groups. Less than half (47%) of the present fleet is owned by oil companies throughout the world, while United States oil companies alone own about one-third of the present capacity. Non-oil companies worldwide account for nearly 37% of the world fleet capacity and governments —mainly military—reflect an ownership of the remaining 16% of the world's capacity.

Ownership distribution has changed radically since the end of the war. On September 1, 1945, oil companies throughout the world owned 25.5% of the total, while the United States oil companies accounted for 18.3% of the world fleets. At that time, also, non-oil companies had a proportion of 18.8%, while governments had more than half of the world capacity with 55.7%.

Ownership shifts show a faster rate of tanker acquisitions by non-oil companies than for either all the oil companies or the United States group. For example, non-oil companies throughout the world nearly doubled their ownership since the end of the war, while oil companies increased their holdings by 86%. During this time, the United States oil companies as a single group increased their capacity by 82.2% on a world-wide basis.

Within the United States, specifically, the government suffered a reduction of 80% in its holdings since the end of the war, while the United States non-oil group more than trebled their fleet with an increase of 213%. United States oil companies increased their capacity by 84.6%. On a T2 basis, the United States government has released its ownership of 448 T2's, while non-oil companies have acquired 85 of these equivalent vessels and United States oil companies approximately 131 T2's.

This change has occurred more rapidly in the last two years than in the period from September 1, 1945 to January 1, 1947. Private owners in the United States as a group have more than doubled their fleet capacities since the end of the war with an increase of 111%. Oil companies alone show an increase during this period of nearly 85%, while non-oil companies have more than trebled their holdings. Of the total private United States fleet, oil companies now own nearly 70% of the capacity with non-oil companies having the other 30%.

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SPEED AND DEADWEIGHT TONNAGE GROUPS OF ACTUAL WORLD TANK SHIP FLEET AS OF JANUARY 1, 1949
Ocean-Going Vessels 2,000 Gross Tons and Over

(Source: U. S. Maritime Commission)

D.W.T. Groups	Speed Groups																							
	6.00 to 6.99 K.		7.00 to 7.99 K.		8.00 to 8.99 K.		9.00 to 9.99 K.		10.00 to 10.99 K.		11.00 to 11.99 K.		12.00 to 12.99 K.		13.00 to 13.99 K.		14.00 to 14.99 K.		15.00 to 15.99 K.		16.00 to 16.99 K.		17.00 to 17.99 K.	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
2,000 to 2,999	-	-	-	-	1	2,500	1	2,300	1	2,700	2	5,000	1	2,600	-	-	-	-	-	-	-	-	-	-
3,000 to 3,999	-	-	-	-	22	71,400	21	72,900	18	57,800	12	42,700	-	-	1	3,900	-	-	-	-	-	-	-	-
4,000 to 4,999	1	4,400	-	-	5	21,600	7	30,900	45	188,400	4	18,100	3	13,800	4	16,000	-	-	-	-	-	-	-	-
5,000 to 5,999	-	-	-	-	5	27,100	11	59,500	19	103,900	2	11,800	11	55,900	-	-	-	-	-	-	-	-	-	-
6,000 to 6,999	-	-	-	-	1	6,100	8	51,200	5	33,100	6	39,800	7	43,800	-	-	-	-	-	-	-	-	-	-
7,000 to 7,999	-	-	1	7,900	-	-	5	38,700	20	150,100	3	21,700	1	7,500	4	29,800	2	14,900	-	-	-	-	-	-
8,000 to 8,999	-	-	-	-	-	-	9	74,900	39	329,300	16	135,200	12	101,500	-	-	-	-	-	-	-	-	-	-
9,000 to 9,999	-	-	-	-	-	-	2	18,500	38	361,900	34	327,000	27	248,000	-	-	5	45,000	2	18,200	-	-	-	-
10,000 to 10,999	-	-	-	-	-	-	3	32,000	65	690,200	79	834,900	13	137,100	-	-	-	-	-	-	-	-	-	-
11,000 to 11,999	-	-	-	-	-	-	4	44,700	42	473,200	49	564,100	33	381,200	1	11,100	-	-	22	260,000	1	11,900	-	-
12,000 to 12,999	-	-	-	-	-	-	2	24,900	20	247,900	66	809,300	82	1,004,800	30	377,300	4	50,000	2	25,400	-	-	1	12,000
13,000 to 13,999	-	-	-	-	-	-	1	13,900	12	161,300	7	95,700	10	133,000	12	157,500	9	120,800	-	-	1	13,100	1	13,500
14,000 to 14,999	-	-	-	-	-	-	-	-	13	186,500	37	537,500	41	599,000	10	147,100	2	28,400	-	-	5	70,500	-	-
15,000 to 15,999	-	-	-	-	-	-	1	15,800	8	121,900	7	107,300	14	214,000	14	213,900	15	233,900	-	-	8	125,600	-	-
16,000 to 16,999	-	-	-	-	-	-	3	48,300	4	65,300	-	-	5	81,500	6	97,700	513	8,536,100	29	478,400	6	98,400	1	16,400
17,000 to 17,999	-	-	-	-	-	-	-	-	2	34,500	-	-	7	123,700	-	-	10	172,600	3	53,700	-	-	1	17,500
18,000 to 18,999	-	-	-	-	-	-	-	-	1	18,100	2	36,100	5	90,500	1	18,600	1	18,300	12	218,400	8	146,600	-	-
19,000 to 19,999	-	-	-	-	-	-	-	-	2	39,000	-	-	2	39,300	4	76,800	-	-	-	-	-	-	-	-
20,000 to 20,999	-	-	-	-	-	-	-	-	1	20,100	2	41,200	-	-	1	20,100	-	-	-	-	-	-	-	-
21,000 to 21,999	-	-	-	-	-	-	-	-	-	-	2	43,300	4	85,100	2	43,200	-	-	-	-	-	-	-	-
22,000 to 22,999	-	-	-	-	-	-	-	-	1	22,600	-	-	-	-	1	22,200	-	-	-	-	-	-	-	-
23,000 to 23,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24,000 to 24,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25,000 to 25,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26,000 to 26,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	25,000	-	-	-	-	1	27,900	-	-
27,000 to 27,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28,000 to 28,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29,000 to 29,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30,000 to 30,999	-	-	-	-	-	-	-	-	-	-	1	29,000	-	-	-	-	-	-	-	-	1	30,000	-	-
Total	1	4,400	1	7,900	34	128,700	78	528,500	356	3,307,800	331	3,699,700	278	3,362,300	92	1,260,200	561	9,220,000	70	1,054,100	35	616,000	4	59,400

(CONTINUED)

D.W.T. Groups	Speed Groups						Total	
	18.00 to 18.99 K.		19.00 to 19.99 K.					
	No.	D.W.T.	No.	D.W.T.			No.	D.W.T.
2,000 to 2,999	-	-	-	-			6	15,100
3,000 to 3,999	-	-	-	-			74	248,700
4,000 to 4,999	-	-	-	-			69	293,200
5,000 to 5,999	-	-	-	-			48	258,200
6,000 to 6,999	-	-	-	-			27	174,000
7,000 to 7,999	-	-	-	-			36	270,600
8,000 to 8,999	-	-	-	-			76	640,900
9,000 to 9,999	-	-	-	-			108	1,018,600
10,000 to 10,999	-	-	-	-			160	1,694,200
11,000 to 11,999	-	-	-	-			152	1,746,200
12,000 to 12,999	-	-	-	-			207	2,551,600
13,000 to 13,999	-	-	-	-			53	708,800
14,000 to 14,999	-	-	-	-			108	1,569,000
15,000 to 15,999	-	-	-	-			68	1,047,900
16,000 to 16,999	-	-	1	15,500			567	9,422,100
17,000 to 17,999	-	-	-	-			23	402,000
18,000 to 18,999	30	551,300	-	-			60	1,097,900
19,000 to 19,999	-	-	-	-			8	155,100
20,000 to 20,999	-	-	-	-			4	81,400
21,000 to 21,999	-	-	-	-			8	171,600
22,000 to 22,999	-	-	-	-			2	44,800
23,000 to 23,999	-	-	-	-			4	92,000
24,000 to 24,999	-	-	-	-			-	-
25,000 to 25,999	-	-	-	-			1	25,000
26,000 to 26,999	-	-	-	-			-	-
27,000 to 27,999	-	-	-	-			1	27,900
28,000 to 28,999	-	-	-	-			-	-
29,000 to 29,999	-	-	-	-			1	29,000
30,000 to 30,999	-	-	-	-			1	30,000
Total	30	551,300	1	15,500			1,872	23,815,800

Ranked on the basis of individual size, Standard Oil Company (N. J.) has the largest fleet with 62 vessels equivalent to 58 T2's and 14.1% of the total privately owned United States fleet. The second largest single fleet ownership is represented by Gulf Oil Corporation with 43 vessels equivalent to slightly more than 35 T2's and 8.6% of total. Third in ranking is the National Bulk Carriers, with 25 vessels equivalent to nearly 29 T2's, because of greater average size and speed than the national tanker, and represents 7.0% of the total United States privately owned fleet.

Since the end of the war, there has emerged a large group of non-oil company operators having for the most part one or a few vessels acquired under the Ship Sales Act. Their number at the present time is 65, although their ownership is also substantial in that the capacity of their vessels accounts for 23.5% of the privately owned United States fleet.

Disposal Program

Virtual completion of the United States Government disposal program has been accomplished at this time. There now remain under United States Maritime Commission ownership only 17 actual ships in the reserve fleet and 4 other vessels that are being repaired for sale, of the total 793 actual tankers constructed or acquired under the various "Merchant Marine Acts." Of the 793 vessels coming under the Maritime Commission's jurisdiction, 536 were designed T2's, either of the SE-A1 or modified types. These 793 vessels also include the smaller T1 and larger T3 types of vessels in addition to privately designed ships.

In total, 492 vessels have been sold and delivered to private owners, of which 343 were to United States and 149 to foreign

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holders. The United States citizens group includes 81 vessels transferred to their accounts under Panamanian registry. In addition, 135 ships were returned to private owners of which 14 were for Panamanian registry. The military acquired 104 vessels with 66 of them being of the T2 design and 35 of the T3 type. Finally, it should be pointed out that the 17 vessels in the reserve fleet are composed of 3 T1 types, 2 private design, and 12 Liberty type vessels.

Utilization

In evaluating the adequacy of the United States fleet, it may be pertinent to appraise the utilization of these vessels. As of the end of September, 1948, there were 471 actual vessels engaged solely in commercial operations under the American flag. Of this number, 59 were temporarily inactive for repairs and other reasons, while 17 represented the reserve fleet of laid-up vessels. The remaining 418 were engaged in various trades having a weighted average round-trip distance of 5,616 nautical miles. Of the total actual deadweight, 15.2% were plying in nearby foreign trade, 8.7% in the overseas foreign service, and 13.9% in the foreign to foreign trade movements. The remaining 49.7% were utilized in the domestic intercoastal service. A substantial increase in the "Foreign to Foreign" trade is accounted for primarily by the relatively large movement stemming from the Persian Gulf area. This movement accounted for 7% of the total United States deadweight tonnage and 8% of the deadweight tonnage in active service on that date. It was equal to approximately 16% of the domestic intercoastal tonnage.

New Construction

A phenomenal resurgence of tanker construction has occurred during the past year. Presently, there are under construction and/or on order 440 vessels of 7,453,-080 deadweight tons. These ships are equivalent to nearly 436 T2's. The largest constructor nation is the United Kingdom which has 38.3% of the total program on its books, while second in magnitude is the United States with a program representing 28.1% of the new construction and third is Sweden having 17.8% of the total. These three countries have nearly 85% of

ANALYSIS OF AGE DISTRIBUTION OF WORLD TANK SHIP FLEET AS OF JANUARY 1, 1949
Ocean-Going Vessels 2,000 Gross Tons and Over

(Source: U. S. Maritime Commission)

Year of Construction	U. S. Maritime Commission		United States Military		Private United States		Total United States		British Empire		Norway		Panama		Other Foreign		World	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
1892	-	-	-	-	-	-	-	-	-	-	-	-	1	4,500	-	-	1	4,500
1893	-	-	-	-	-	-	-	-	-	-	-	-	1	4,000	1	5,200	2	9,200
1894	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1895	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1896	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1897	-	-	-	-	-	-	-	-	1	8,600	-	-	-	-	2	14,200	3	22,800
1898	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1899	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5,700	1	5,700
1900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4,200	1	4,200
1901	1	8,800	-	-	-	-	1	8,800	1	4,000	1	16,100	-	-	1	5,500	4	34,400
1902	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1903	-	-	-	-	-	-	-	-	-	-	-	-	1	6,800	-	-	1	6,800
1904	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1905	-	-	-	-	-	-	-	-	1	6,700	1	11,500	-	-	-	-	2	18,200
1906	-	-	-	-	-	-	-	-	1	7,600	-	-	-	-	-	-	1	7,600
1907	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1908	-	-	-	-	-	-	-	-	-	-	-	-	1	7,700	1	6,600	2	14,300
1909	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8,100	1	8,100
1911	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7,300	1	7,300
1912	-	-	-	-	-	-	-	-	2	10,600	-	-	1	5,300	2	18,600	5	34,500
1913	-	-	-	-	-	-	-	-	3	28,400	2	28,300	1	7,900	8	67,100	14	131,700
1914	-	-	-	-	-	-	-	-	6	50,300	1	16,100	2	24,500	7	58,700	16	149,600
1915	-	-	-	-	1	9,100	1	9,100	-	-	-	-	1	11,700	-	-	2	20,800
1916	-	-	-	-	1	12,300	1	12,300	1	8,500	-	-	3	26,100	10	92,400	15	139,300
1917	-	-	-	-	3	40,800	3	40,800	10	49,000	-	-	5	43,600	3	20,500	21	153,900
1918	1	11,500	-	-	2	26,600	3	38,100	9	74,700	2	23,500	4	38,800	5	45,000	23	220,100
1919	-	-	-	-	8	81,300	8	81,300	6	56,600	-	-	9	95,500	4	41,700	27	275,100
1920	-	-	-	-	12	128,800	12	128,800	7	58,200	1	4,800	6	60,800	12	108,500	38	361,100
1921	-	-	-	-	15	189,100	15	189,100	8	91,200	4	30,300	8	87,600	13	112,700	48	510,900
1922	-	-	-	-	1	14,200	1	14,200	9	89,900	1	11,000	1	13,000	9	82,700	21	210,800
1923	-	-	-	-	-	-	-	-	4	41,800	-	-	3	41,100	8	60,300	15	143,200
1924	-	-	-	-	1	10,500	1	10,500	3	31,200	-	-	-	-	11	58,300	15	100,000
1925	-	-	-	-	-	-	-	-	6	40,800	2	25,200	1	12,400	7	29,800	16	108,200
1926	-	-	-	-	1	14,900	1	14,900	5	50,200	-	-	2	25,800	11	64,700	19	155,600
1927	-	-	-	-	2	34,500	2	34,500	18	170,600	5	49,900	-	-	25	148,500	50	403,500
1928	-	-	-	-	4	63,800	4	63,800	15	135,700	9	105,600	4	41,600	24	180,700	56	527,400
1929	-	-	-	-	1	14,600	1	14,600	8	90,100	8	75,300	2	28,900	13	129,400	32	338,300
1930	-	-	-	-	8	123,700	8	123,700	5	61,800	20	240,600	4	56,800	12	135,600	49	618,500
1931	-	-	-	-	3	44,600	3	44,600	10	111,500	20	242,400	3	46,200	13	136,400	49	581,100
1932	-	-	-	-	-	-	-	-	2	28,400	3	29,000	1	18,100	10	110,100	16	185,600
1933	-	-	-	-	-	-	-	-	3	54,000	2	23,800	1	18,000	1	18,000	7	113,800
1934	-	-	-	-	-	-	-	-	1	5,400	3	34,900	-	-	5	46,300	9	86,600
1935	-	-	-	-	2	29,800	2	29,800	11	127,600	11	149,100	-	-	6	55,700	30	362,200
1936	-	-	-	-	6	83,200	6	83,200	14	153,500	6	86,500	2	26,600	10	113,800	38	463,600
1937	-	-	-	-	12	155,200	12	155,200	21	264,600	13	196,300	3	28,800	8	73,700	57	718,600
1938	-	-	-	-	8	112,800	8	112,800	16	186,300	5	71,900	2	28,600	19	194,600	50	594,200
1939	-	-	2	36,400	5	83,600	7	120,000	15	186,300	16	225,300	1	14,800	16	180,700	55	727,100
1940	-	-	4	73,500	8	115,000	12	188,500	3	40,600	6	88,700	-	-	9	118,200	30	436,000
1941	1	12,800	3	50,200	13	194,800	17	257,800	21	224,300	4	54,200	4	58,700	3	37,500	49	632,500
1942	-	-	11	180,900	38	615,400	49	796,300	29	351,800	5	66,700	-	-	7	91,300	90	1,306,100
1943	10	106,300	20	343,400	143	2,107,200	173	2,556,900	27	329,600	6	80,200	20	265,400	29	433,800	255	3,665,900
1944	4	48,800	36	603,000	97	1,601,500	137	2,253,300	72	961,800	12	164,700	25	417,000	33	512,900	279	4,309,700
1945	4	16,800	15	232,500	78	1,253,700	97	1,503,000	42	571,600	22	342,000	44	650,800	33	354,200	238	3,421,600
1946	-	-	5	92,000	2	25,400	7	117,400	36	432,700	3	29,100	-	-	12	123,100	58	702,300
1947	-	-	-	-	-	-	-	-	11	124,500	7	124,600	4	45,700	14	163,800	36	458,600
1948	-	-	-	-	1	12,900	1	12,900	9	103,300	7	94,400	4	47,800	3	46,300	24	304,700
TOTAL	22	205,000	96	1,611,900	476	7,199,300	593	9,016,200	472	5,424,300	208	2,742,000	175	2,310,900	424	4,322,400	1,872	23,815,800

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ANALYSIS OF OWNERSHIP WITHIN FLAGS OF THE WORLD TANK SHIP ACTUAL FLEET AS OF JANUARY 1, 1949
Ocean-Going Vessels 2,000 Gross Tons and Over
(Source: U. S. Maritime Commission)

Flag	Total Actual			Total All Oil Companies			U. S. Oil Companies			Non-Oil Companies			Governments		
	No.	D.W.T.	Average Speed	No.	D.W.T.	Average Speed	No.	D.W.T.	Average Speed	No.	D.W.T.	Average Speed	No.	D.W.T.	Average Speed
WESTERN HEMISPHERE															
United States	593	9,016,200	14.1 K.	329	5,006,700	13.9 K.	329	5,006,700	13.9 K.	147	2,192,600	13.9 K.	117	1,816,900	15.2 K.
Panama	175	2,310,900	13.0	102	1,429,600	13.0	102	1,429,600	13.0	73	881,300	12.8	-	-	-
Canada	22	241,600	13.4	10	133,200	13.5	9	129,600	13.6	12	108,400	13.2	-	-	-
Others:															
Argentina	29	245,200	11.7	2	7,400	9.4	-	-	-	15	133,000	11.0	12	104,800	12.2
Brazil	5	44,000	10.2	-	-	-	-	-	-	4	35,600	10.3	1	8,400	10.0
Chile	2	9,600	11.0	-	-	-	-	-	-	-	-	-	2	9,600	11.0
Honduras	2	21,000	11.3	-	-	-	-	-	-	2	21,000	11.3	-	-	-
Mexico	13	129,800	10.5	-	-	-	-	-	-	-	-	-	13	129,800	10.5
Peru	1	4,300	10.0	-	-	-	-	-	-	-	-	-	1	4,300	10.0
Uruguay	2	33,600	14.5	-	-	-	-	-	-	-	-	-	2	33,600	14.5
Venezuela	28	116,700	9.6	28	116,700	9.6	23	100,300	9.6	-	-	-	-	-	-
Sub-Total	82	604,200	10.9	30	124,100	9.5	23	100,300	9.6	21	189,600	10.9	31	290,500	11.6
TOTAL WESTERN HEMISPHERE (Incl. Canada & Philippines)	872	12,172,900	13.7	471	6,693,600	13.6	463	6,666,200	13.6	252	3,371,900	13.4	149	2,107,400	14.7
EUROPE															
E.C.A. Countries	938	11,026,300	12.3	310	4,500,600	11.8	83	984,700	12.0	536	5,455,400	12.4	92	1,070,300	13.6
Belgium	5	58,500	12.2	3	39,200	12.7	3	39,200	12.7	2	19,300	11.2	-	-	-
Denmark	15	201,100	11.8	4	59,200	11.7	4	59,200	11.7	11	141,900	11.9	-	-	-
France	51	698,500	13.0	10	101,000	11.3	3	27,800	11.5	23	323,000	12.5	18	274,500	14.2
Germany	1	9,200	9.0	-	-	-	-	-	-	1	9,200	9.0	-	-	-
Greece	11	149,100	13.5	-	-	-	-	-	-	10	140,800	13.7	1	8,300	10.0
Italy	62	745,400	12.7	2	27,200	11.5	2	27,200	11.5	44	486,300	12.2	16	231,900	14.0
Netherlands	91	665,600	11.5	79	536,200	11.2	7	66,200	13.5	12	129,400	12.4	-	-	-
Norway	208	2,742,000	12.4	11	131,400	11.8	11	131,400	11.8	197	2,610,600	12.4	-	-	-
Portugal	6	59,100	11.9	-	-	-	-	-	-	5	53,400	11.9	1	5,700	12.0
Sweden	36	506,200	13.5	-	-	-	-	-	-	36	506,200	13.5	-	-	-
Switzerland	2	17,900	10.3	-	-	-	-	-	-	2	17,900	10.3	-	-	-
Turkey	3	30,000	13.7	-	-	-	-	-	-	1	9,000	14.0	2	21,000	13.6
United Kingdom	447	5,143,700	12.0	201	3,606,400	11.9	53	633,700	11.9	192	1,008,400	11.8	54	528,900	13.2
Others:															
U.S.S.R.	19	175,900	10.9	-	-	-	-	-	-	-	-	-	19	175,900	10.9
Spain	21	176,600	11.4	-	-	-	-	-	-	-	-	-	21	176,600	11.4
Yugoslavia	1	9,400	11.5	-	-	-	-	-	-	-	-	-	1	9,400	11.5
Finland	5	59,000	10.6	-	-	-	-	-	-	5	59,000	10.6	-	-	-
Poland	1	9,300	10.5	-	-	-	-	-	-	-	-	-	1	9,300	10.5
Sub-Total	47	430,200	11.1	-	-	-	-	-	-	5	59,000	10.6	42	371,200	11.1
TOTAL EUROPE	985	11,456,500	12.2	310	4,500,600	11.8	83	984,700	12.0	541	5,514,400	12.4	134	1,441,500	13.0
JAPAN	7	85,900	13.3	-	-	-	-	-	-	7	85,900	13.3	-	-	-
CHINA	5	61,500	12.3	-	-	-	-	-	-	5	61,500	12.3	-	-	-
UNION OF SOUTH AFRICA	2	33,600	14.5	-	-	-	-	-	-	2	33,600	14.5	-	-	-
INDIA	1	5,400	8.0	1	5,400	8.0	-	-	-	-	-	-	-	-	-
TOTAL WORLD FLEETS	1,872	23,815,800	13.0	782	11,199,600	12.9	546	8,665,600	11.8	807	9,067,300	12.8	283	3,548,900	14.0
TOTAL BRITISH EMPIRE	472	5,424,300	12.1	212	3,745,000	12.0	62	763,300	12.2	206	1,150,400	12.0	54	528,900	13.2

the present total construction program throughout the world.

Largest of the recipient nations is Norway, which has placed orders for 156 T2 equivalents, accounting for 35.8% of the total program. The United States and Panama combined will receive 32.6% of the new construction, while Great Britain will acquire 16.5% of the total capacity represented by the new vessels. These four nations, therefore, will acquire approximately 85% of the present capacity under construction.

On a world-wide basis, the current program represents more than one-third of today's fleet. For individual major flags, however, the proportions of new capacity are quite startling. Of the approximately 143 T2 equivalents to be registered under the United States and Panamanian flags, there is represented by this new construction 22% of the current total fleets of these two countries and 27% of the privately owned fleets. For the British Empire, the present construction program represents 26% of the total present capacity and 29% of the non-government ownership under those flags. In the case of Norway, which has no government ownership of tankers, the present capacity under construction and on order for that nation is greater than the present fleet, being 112% of the T2 equivalent vessels registered under that flag.

The present construction program is startling not only in its magnitude, but also because of the evolutionary changes occurring in design types. Of the 436 T2 equivalents under construction and/or on order world-wide today, more than 37% have a speed under 14 knots, while 32.5% are in the 14 knot group and 30.4% have speeds of 15 knots or more. Better than 20% of the total world construction falls within the 16 knot speed group alone.

With reference to size, it develops that 33.7% are under 16,000 deadweight tons, 18.1% fall within the 16,000 deadweight ton group, and 48.2% are 17,000 deadweight tons and over. The magnitude of increasing size is pointed up to a greater degree by the fact that 11.2% of the present construction program falls within the 28,000 deadweight ton group and 6.7% in the group of 30,000 deadweight tons and over.

A question immediately arises regarding the effect of this construction program upon the future size of the world tankship fleets. It should be realized that these 436 T2 equivalents under construction or on order represent 90% of the tonnage built in the two highest years of world tanker construction, namely 1943 and 1944. With approximate delivery dates terminating by the end of 1952, it develops that in 1949 and in 1950 more than 238 T2 equivalents of this entire program will be delivered and in service.

The impact of this construction program can best be evaluated with relation to the present privately owned world fleet which represents 1,070 T2's and indicates the number available for commercial service. Few of the new vessels will be for government account, the only exceptions being the number for Argentine registry and less than six T2's for French registry. Not more than 20 T2 equivalents of the 436, therefore, would be for government service, leaving 416 for private account. This number represents an increase of 39% over the present privately owned fleet.

In calculating the effect upon the world picture during the next four years, a range has been established showing the possible limits of these additions. With no allowance for scrapping over-age vessels, or for marine and other losses, there would be 1,708 T2 equivalents by the end of 1952 as compared with nearly 1,469 T2's when full allowance is made for scrapping vessels twenty years and over.

Determinations by present fleet owners as to their rate of scrappage, therefore, will make a difference in the size of the total fleet involving 240 T2 equivalents within the next four years. Obviously, the decisions of private fleet owners based upon the economics of tanker transporta-

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WORLD TANK SHIP FLEETS

DEADWEIGHT TONNAGE GROUPS OF TOTAL WORLD TANK SHIPS UNDER CONSTRUCTION AND/OR ON ORDER AS OF OCTOBER 28, 1948

Ocean-Going Vessels 2,000 Gross Tons and Over

(Source: U. S. Maritime Commission)
(Published information and private data)

D.W.T. Groups	Speed Groups: 11.00 to 11.99 K.		12.00 to 12.99 K.		13.00 to 13.99 K.		14.00 to 14.99 K.		15.00 to 15.99 K.		16.00 to 16.99 K.		17.00 to 17.99 K.		18.00 to 18.99 K.		Total	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
3,000 to 3,999	1	3,400	1	3,650	-	-	-	-	-	-	-	-	-	-	-	-	2	7,050
4,000 to 4,999	-	-	-	-	1	4,200	-	-	-	-	-	-	-	-	-	-	1	4,200
5,000 to 5,999	1	5,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5,300
6,000 to 6,999	-	-	-	-	6	36,680	-	-	-	-	-	-	-	-	-	-	6	36,680
7,000 to 7,999	1	7,800	-	-	1	7,500	-	-	-	-	-	-	-	-	-	-	2	15,300
8,000 to 8,999	8	67,200	-	-	3	26,100	1	8,250	-	-	-	-	-	-	-	-	12	101,550
9,000 to 9,999	1	9,000	5	45,000	1	9,000	-	-	-	-	-	-	-	-	-	-	7	63,000
10,000 to 10,999	-	-	8	85,400	1	10,000	-	-	-	-	-	-	-	-	-	-	9	95,400
11,000 to 11,999	-	-	3	33,000	2	22,400	-	-	-	-	-	-	-	-	-	-	5	55,400
12,000 to 12,999	28	341,500	23	277,200	16	197,700	4	49,200	-	-	-	-	-	-	-	-	71	865,600
13,000 to 13,999	-	-	-	-	26	349,800	9	120,300	-	-	4	54,000	-	-	-	-	39	524,100
14,000 to 14,999	-	-	7	101,800	2	28,500	-	-	-	-	-	-	-	-	-	-	9	130,300
15,000 to 15,999	3	45,000	10	150,000	5	75,500	36	558,350	-	-	-	-	-	-	-	-	54	828,850
16,000 to 16,999	-	-	1	16,500	31	497,650	45	738,250	8	130,900	-	-	-	-	-	-	85	1,383,300
17,000 to 17,999	-	-	-	-	6	104,650	4	69,700	-	-	-	-	-	-	-	-	10	174,350
18,000 to 18,999	-	-	-	-	11	200,200	2	36,500	3	54,000	-	-	2	36,000	-	-	18	326,700
19,000 to 19,999	-	-	-	-	-	-	4	76,000	-	-	-	-	-	-	-	-	4	76,000
20,000 to 20,999	-	-	-	-	1	20,000	-	-	-	-	-	-	-	-	-	-	1	20,000
21,000 to 21,999	-	-	-	-	2	43,000	-	-	-	-	-	-	-	-	-	-	2	43,000
22,000 to 22,999	-	-	-	-	-	-	2	45,600	-	-	-	-	-	-	-	-	2	45,600
23,000 to 23,999	-	-	-	-	1	23,500	5	115,000	-	-	-	-	-	-	-	-	6	138,500
24,000 to 24,999	-	-	-	-	4	96,000	22	535,900	-	-	-	-	-	-	-	-	26	631,900
25,000 to 25,999	-	-	-	-	1	25,000	-	-	-	-	-	-	-	-	-	-	1	25,000
26,000 to 26,999	-	-	-	-	-	-	1	26,000	-	-	24	624,000	-	-	-	-	25	650,000
27,000 to 27,999	-	-	-	-	1	27,000	1	27,000	-	-	-	-	-	-	-	-	2	54,000
28,000 to 28,999	-	-	-	-	3	84,000	-	-	-	-	24	672,000	-	-	-	-	27	756,000
29,000 to 29,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30,000 to 30,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	300,000	10	300,000
31,000 to 31,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32,000 to 32,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	96,000	3	96,000
Total	43	479,200	58	712,550	125	1,888,380	136	2,406,050	11	184,900	52	1,350,000	2	36,000	13	396,000	440	7,453,080

EMPLOYMENT OF TOTAL UNITED STATES TANK SHIP FLEET BY AREAS (EXCLUDING MILITARY) AS OF SEPTEMBER 30, 1948

Ocean-Going Vessels 2,000 Gross Tons and Over
(Source: U. S. Maritime Commission)

Area	Private Fleet Employment			U.S.M.C. Fleet Employment			Total U. S. Fleet Employment			As Per Cent Of Total Employment	Round-Trip Distances (Nautical Miles)
	No.	Gross Tons	D.W.T.	No.	Gross Tons	D.W.T.	No.	Gross Tons	D.W.T.		
I. NEAR-BY FOREIGN											
Canada	7	66,178	106,300	-	-	-	7	66,178	106,300	1.4%	1,646
Mexico	3	25,342	38,200	-	-	-	3	25,342	38,200	0.5	1,044
West Indies, Bermuda & North Coast of South America	58	604,081	981,200	-	-	-	58	604,081	981,200	13.3	3,798
TOTAL	68	695,601	1,125,700	-	-	-	68	695,601	1,125,700	15.2	3,501
II. OVERSEAS FOREIGN											
Transatlantic											
Atlantic Europe & U. K.	7	66,781	107,100	-	-	-	7	66,781	107,100	1.5	7,448
Mediterranean	1	7,227	10,600	-	-	-	1	7,227	10,600	0.1	10,248
West Africa	1	9,925	15,900	-	-	-	1	9,925	15,900	0.2	6,670
Persian Gulf	25	266,858	430,800	-	-	-	25	266,858	430,800	5.8	17,028
Sub-Total	34	350,791	564,400	-	-	-	34	350,791	564,400	7.6	14,791
South America											
East Coast	4	38,826	61,400	-	-	-	4	38,826	61,400	0.9	9,524
West Coast	1	10,448	16,800	-	-	-	1	10,448	16,800	0.2	10,280
Sub-Total	5	49,274	78,200	-	-	-	5	49,274	78,200	1.1	9,686
TOTAL	39	400,065	642,600	-	-	-	39	400,065	642,600	8.7	14,170
III. FOREIGN TO FOREIGN											
Persian Gulf-Canada	3	30,909	49,400	-	-	-	3	30,909	49,400	0.7	16,660
Persian Gulf-East Coast of South America	7	72,095	117,500	-	-	-	7	72,095	117,500	1.6	18,052
Persian Gulf-Atlantic Europe	11	111,955	182,700	-	-	-	11	111,955	182,700	2.5	13,754
Persian Gulf-Mediterranean	6	61,908	100,000	-	-	-	6	61,908	100,000	1.3	8,982
Persian Gulf-E. & S. Africa	4	41,785	66,400	-	-	-	4	41,785	66,400	0.9	10,422
Aruba-E. Coast of S. America	11	106,883	171,100	-	-	-	11	106,883	171,100	2.3	1,030
Caribbean Area	5	40,641	64,200	-	-	-	5	40,641	64,200	0.9	2,346
Other Foreign-Foreign	17	168,947	272,200	-	-	-	17	168,947	272,200	3.7	9,815
TOTAL	64	635,123	1,023,500	-	-	-	64	635,123	1,023,500	13.9	9,815
IV. DOMESTIC											
Atlantic Gulf	209	1,969,011	3,174,500	-	-	-	209	1,969,011	3,174,500	42.9	3,722
Pacific	28	238,387	374,000	-	-	-	28	238,387	374,000	5.1	1,802
Intercoastal	3	27,278	43,600	-	-	-	3	27,278	43,600	0.6	9,354
Hawaii	6	49,583	74,400	-	-	-	6	49,583	74,400	1.0	4,182
Puerto Rico	1	7,218	10,500	-	-	-	1	7,218	10,500	0.1	2,276
TOTAL	247	2,291,477	3,677,000	-	-	-	247	2,291,477	3,677,000	49.7	3,599
TOTAL ACTIVE SERVICE	418	4,022,266	6,468,800	-	-	-	418	4,022,266	6,468,800	87.5	5,616
V. LAID-UP VESSELS											
Hudson River, N. Y.	-	-	-	3	21,729	32,000	3	21,729	32,000	0.4	
James River, Va.	-	-	-	5	36,198	55,400	5	36,198	55,400	0.8	
Suisun Bay, Cal.	-	-	-	4	28,732	43,400	4	28,732	43,400	0.6	
Beaumont, Tex.	-	-	-	3	9,786	12,600	3	9,786	12,600	0.2	
Wilmington, N. C.	-	-	-	1	7,218	10,500	1	7,218	10,500	0.1	
Astoria, N. Y.	-	-	-	1	7,218	10,600	1	7,218	10,600	0.1	
Sub-Total	-	-	-	17	110,881	164,500	17	110,881	164,500	2.2	
Temporarily Inactive	53	431,719	675,700	6	54,844	86,700	59	486,563	762,400	10.3	
TOTAL	53	431,719	675,700	23	165,725	251,200	76	597,444	926,900	12.5	
GRAND TOTAL ALL VESSELS	471	4,453,985	7,144,500	23	165,725	251,200	494	4,619,710	7,395,700	100.0	

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WORLD TANK SHIP FLEETS

UNITED STATES MARITIME COMMISSION TYPE WAR-BUILT TANK SHIPS
AS OF OCTOBER 1, 1948
Vessels 2,000 Gross Tons and Over

(Source: Vessel Records Branch, U. S. Maritime Commission)

Design Type Constructed And Acquired	Total Constructed			Disposition									
				Returned to Private Owners (1)	Transferred		Lost	Sold for Scrap	Sold and Delivered to		Reserve Fleet	Under General Agency	
	No.	Designed D.W.T.	Computed Total D.W.T.		To Army	To Navy			U. S. Citizens(2)	Foreign		Operating	Repairing For Operation	Repairing For Sale
TOTAL ALL TYPES	793	-	-	135	1	103	37	4	343	149	17	-	-	4
TOTAL T1	32	-	133,660	-	1	2	-	-	13	13	3	-	-	-
T1-MB-T1	12	4,130	49,560	-	-	1	-	-	9	2	-	-	-	-
T1-MB-T2	20	4,205	84,100	-	1	1	-	-	4	11	3	-	-	-
TOTAL T2	536	-	8,967,817	48	-	66	12	4	267	136	-	-	-	3
T2 or T2A	11	15,850	174,350	-	-	7	-	-	4	-	-	-	-	-
T2-SE-A1	481	16,765	8,063,965	48	-	16	12	4	263(3)	135	-	-	-	3
T2-SE-A2	31	16,583	514,073	-	-	30	-	-	-	1	-	-	-	-
T2-SE-A2(Mod.)	12	16,583	198,996	-	-	12	-	-	-	-	-	-	-	-
T2-SE-A3	1	16,433	16,433	-	-	1	-	-	-	-	-	-	-	-
TOTAL T3	63	-	1,122,030	19	-	35	3	-	6	-	-	-	-	-
T3-S-A1	12	16,015	192,180	12	-	-	-	-	-	-	-	-	-	-
T3-S-A1(Mod.)AO	5	16,015	80,075	-	-	2	-	-	3	-	-	-	-	-
T3-S-A1(Redesign)	2	16,015	32,030	-	-	-	-	-	2	-	-	-	-	-
T3-S-BF1	5	18,500	92,500	4	-	-	1	-	-	-	-	-	-	-
T3-S-BZ1	3	23,000	69,000	3	-	-	-	-	-	-	-	-	-	-
T3-S2-A1(Mod.)	18	18,230	328,140	-	-	17	1	-	-	-	-	-	-	-
T3-S2-A1(Redesign)	12	18,230	218,760	-	-	11	1	-	-	-	-	-	-	-
T3-S2-A3	5	18,354	91,770	-	-	5	-	-	-	-	-	-	-	-
T3-MAZ-1	1	17,575	17,575	-	-	-	-	-	1	-	-	-	-	-
PRIVATE (Coastal)	9	-	-	8	-	-	1	-	-	-	-	-	-	-
PRIVATE (Misc. Ocean-Going)	91	-	-	60	-	-	19	-	10	-	2	-	-	-
TOTAL Z-ET1-S-C3	62	10,800	669,600	-	-	-	2	-	47	-	12	-	-	1

(1) Includes: Panamanian Flag - 9 Private (Coastal), 5 Private (Miscellaneous Ocean-Going).
(2) Includes: Panamanian Flag - 7 T1-MB-T1, 1 T1-MB-T2, 72 T2-SE-A1, 1 Private (Miscellaneous Ocean-Going).
(3) Includes: Fort Dearborn, T2-SE-A1, sold for non-operational purpose.

tion can result in either increasing the present capacity by approximately one-third or, on the basis of full scrappage, result in a fleet of 1,469 T2 equivalents representing an increase of 15% over the present. Should the hypothesis of full allowance for scrappage be made and the world fleet at the end of 1952 approximate 1,469 T2 equivalents, it would result in a carrying capacity some 37% above the present privately owned fleets world-wide.

There can be little question that the next four years are highly critical in the problems to be met by tanker operators throughout the world and, particularly, the United States owners of tank ship fleets. With the virtual completion of the United States Maritime Commission's ship disposal program, the challenge and full responsibility for supplying the world's peacetime petroleum needs falls upon the private operators of world tank ship fleets. In addition, there is also the consideration of military requirements necessitating long hauls and unusual operating conditions. Finally, the private tanker owners and operators are faced with the urgent need for long-term planning of necessary replacement, scrappage and expansion programs to reduce the age distribution distortions of their present fleets.

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OWNERSHIP OF UNITED STATES PRIVATELY OWNED TANK SHIP FLEET
AS OF JANUARY 1, 1949
Ocean-Going Vessels 2,000 Gross Tons and Over

(Source: U. S. Maritime Commission)

Owner	Actual			T2-SE-A1 Equivalents	
	No.	Avg. Speed	D.W.T.	T2	T2 As % of Total
Oil Companies					
Atlantic Refining Company	13	13.9	220,400	12.6	3.1%
Cities Service Oil Company	17	16.6	282,400	16.9	4.1
Gulf Oil Corporation	43	13.4	639,200	35.3	8.6
Sun Oil Company	21	13.3	320,000	17.4	4.2
Pan-American Petroleum & Transport Co.	14	13.7	216,500	12.2	3.0
Sinclair Refining Co. - Marine Dept.	13	13.6	175,400	9.8	2.4
Socony-Vacuum Oil Co., Inc.	21	14.8	342,400	20.8	5.1
Standard Oil Co. of California	18	13.8	250,600	14.2	3.5
Standard Oil Co. (New Jersey)	62	13.9	1,011,600	58.0	14.1
The Texas Company	28	13.9	391,700	22.4	5.4
Tide Water Associated Oil Co.	16	12.6	212,500	11.0	2.7
All Other Oil Companies	63	14.1	944,000	54.8	13.3
Sub-Total Oil Companies	329	13.9	5,006,700	285.4	69.5
Non-Oil Companies					
National Bulk Carriers, Inc.	25	15.5	461,900	28.7	7.0
65 Other Non-Oil Companies	122	13.5	1,740,700	96.6	23.5
Sub-Total Non-Oil Companies	147	13.9	2,192,600	125.3	30.5
Grand Total	476	13.9	7,199,300	410.7	100.0
Jan. 1, 1949 Total Private	476	13.9	7,199,300	410.7	100.0
Oil	329	13.9	5,006,700	285.4	69.5
Non-Oil	147	13.9	2,192,600	125.3	30.5
Jan. 1, 1947 Total Private	267	13.5	3,720,100	221.9	100.0
Oil	224	13.4	3,052,900	182.1	82.1
Non-Oil	43	14.3	667,200	39.8	17.9
Sep. 1, 1945 Total Private	261	13.0	3,262,500	194.6	100.0
Oil	208	12.9	2,591,900	154.6	79.4
Non-Oil	53	13.4	670,600	40.0	20.6
Percent Change to Jan. 1, 1949 from:					
Jan. 1, 1947 Total Private	78.3%	+3.0%	+ 93.5%	+ 85.1%	-
Oil	46.9	+3.7	+ 64.0	+ 56.7	-
Non-Oil	241.9	-2.8	+228.6	+214.8	-
Sep. 1, 1945 Total Private	82.4	+6.9	+120.7	+111.0	-
Oil	58.2	+7.8	+ 93.2	+ 84.6	-
Non-Oil	177.4	+3.7	+227.0	+213.2	-

U.S.M.C. Report on Domestic Tanker Traffic

(Continued from Page 87)

Atlantic coastwise, Gulf, Pacific coastwise, and Great Lakes, tankship traffic moved principally in one direction—outbound from refineries and storage facilities located at North Atlantic ports, Louisiana and Texas ports, California ports, and lower Lake Michigan ports. Thus, of the 29.9 million tons that moved within the three coastal districts by far the majority of the traffic represented one-way loads. While additional data on ports and commodities carried are available for public inspection in the Trade Routes Branch of the Research Division, it is not now possible to prepare for release statistics on 1947 domestic tankship traffic in greater detail.

Movement	Mill. Tons	Mill. Bbls.
From Gulf ports to Atl. ports..	75.39	502.08
From Atl. ports to Gulf ports..	0.62	3.85
From Pac. ports to Alaska....	0.38	2.51
From Alaska to Pac. ports....	0.00	0.00
From Pac. ports to Hawaii....	0.93	6.19
From Hawaii to Pac. ports....	0.05	0.25

WORLD TANK SHIP CONSTRUCTION BY YEARS FROM 1900
Ocean-Going Vessels 2,000 Gross Tons and Over
(Source: U. S. Maritime Commission)

Year	Actual				T2-SE-A1 Equivalent	
	Number	Gross Tons	D.W.T.	Weighted Avg. Speed	Number	D.W.T.
1900	8	37,700	54,676	10.1 K.	2.3	38,500
1901	9	44,747	65,328	10.0	2.7	45,300
1902	10	50,418	73,175	9.6	2.9	48,600
1903	14	82,086	120,440	9.8	4.8	80,400
1904	3	9,339	13,465	9.4	0.5	8,400
1905	1	10,870	16,075	9.4	0.6	10,100
1906	5	19,774	29,400	9.3	1.1	18,400
1907	5	27,479	39,877	9.1	1.5	25,100
1908	23	128,450	186,679	9.9	7.7	129,000
1909	14	67,100	100,778	9.7	4.0	67,000
1910	5	26,078	37,118	9.9	1.5	25,200
1911	3	9,196	13,600	9.6	0.5	8,400
1912	31	143,207	209,235	9.9	8.4	140,800
1913	56	307,518	459,415	9.8	18.6	311,800
1914	49	332,335	467,942	9.9	19.0	318,500
1915	10	62,720	89,801	10.2	3.8	63,700
1916	45	261,601	430,632	10.2	18.1	303,400
1917	73	424,860	649,833	10.6	28.2	472,800
1918	68	422,234	650,924	10.3	27.6	462,800
1919	73	473,230	727,212	10.2	30.7	514,700
1920	109	697,157	1,075,025	10.2	45.4	761,100
1921	152	1,077,894	1,657,765	10.3	70.6	1,183,600
1922	70	470,298	709,182	10.3	30.0	503,000
1923	30	188,638	287,710	10.4	12.3	206,200
1924	24	128,027	186,343	10.2	8.0	134,100
1925	38	230,830	335,223	10.5	14.5	243,100
1926	40	255,644	380,492	10.4	16.3	273,200
1927	79	450,102	664,560	10.4	28.4	476,100
1928	108	705,219	1,072,188	10.6	46.8	784,600
1929	49	371,765	551,319	11.1	25.1	420,800
1930	91	709,570	1,105,799	11.3	51.4	861,500
1931	100	779,174	1,183,413	11.2	54.7	917,100
1932	27	209,796	312,583	11.5	14.7	246,400
1933	10	100,933	151,463	12.0	7.5	125,700
1934	20	146,531	211,703	12.1	10.5	176,100
1935	48	390,047	584,992	12.0	28.8	482,800
1936	69	574,866	859,804	12.4	44.0	737,700
1937	87	764,675	1,131,329	12.5	58.4	979,000
1938	98	818,692	1,218,531	12.6	63.3	1,061,700
1939	96	855,083	1,277,688	13.4	70.2	1,176,900
1940	50	472,318	722,748	13.9	41.4	694,100
1941	76	655,301	1,008,871	13.0	54.1	907,000
1942	116	1,083,212	1,683,580	14.4	99.7	1,671,500
1943	271	2,484,182	3,872,689	13.8	220.2	3,691,700
1944	287	2,797,505	4,420,515	14.4	262.3	4,397,400
1945	219	1,957,329	3,104,087	14.2	181.2	3,037,800
1946	53	426,718	610,100	13.0	32.5	544,900
1947	33	300,605	446,500	13.2	24.2	405,700
6 Mos. 1948	21	175,137	265,900	13.3	14.5	243,100
ESTIMATED						
4 Mos. 1948	71	n.a.	1,006,850	13.8	57.4	962,300
1949	103	n.a.	1,862,630	14.6	111.6	1,871,000
1950	111	n.a.	2,090,700	14.6	127.0	2,129,200
1951	108	n.a.	1,747,200	13.9	98.7	1,654,700
1952	47	n.a.	745,700	14.1	41.1	689,000

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LOG EXCLUSIVE

DISPOSITION OF THE USMC EMERGENCY TANKER FLEET

An exclusive LOG survey completing the disposition of the war-built tanker fleet, who bought them, their new names, and the flags they now fly.

Continuing, from the 1948 Annual Review and Yearbook Number of The LOG, the survey on the disposition of the United States Maritime Commission war-built turbo-electric drive tanker fleet, we are now able to report that early in 1949 the title was transferred to the new owner on the last T2-SE-A1 type tankship available for sale under the authority of the Merchant Ship Sales Act of 1946. In the 1948 Yearbook of The LOG there was tabulated the purchasers and the names of the tankers sold for American flag operation up to that time, and in the case of sale to foreign flag the names of the vessels and the countries in which they were registered was also tabulated. The vessels sold and transferred since that time are similarly listed in this issue, marking the conclusion of the greatest sale of tankers in the history of the world, unless some of the tankships of this type now being operated by and for the military establishments of the United States should at some time in the future be released for sale to private interests. These tankers have been sold by the Government's shipping agency through the medium of three legally authorized methods, i.e., the Merchant Marine Act, 1936, as amended; the Merchant Ship Sales Act of 1946; and PDX-damaged vessel sales, and, in addition, the tankers transferred to foreign interests were sold by permission granted the Maritime Commission by the Joint Chiefs of Staff.

A total of 447 tankers of the T2 type have been sold, representing 4,608,558 gross tons, 7,355,401 deadweight tons, with turbo-electric propulsion plants aggregating 3,237,290 shaft horsepower. Of these, 244 were acquired for operation under American registry, these representing 2,510,201 gross tons, 4,014,181 deadweight tons, and 1,766,560 shaft horsepower of propelling machinery. A considerable number also have been acquired by American interests for operation under foreign flags, principally Panama. Transferred to Panama flag were 71 of these tankships, but, however, not all are owned by American interests. The total transferred to foreign flags was 203 vessels of 2,098,348 gross tons, 3,341,220 deadweight tons, and 1,470,730 shaft horsepower of propulsion machinery, these going to twelve national registries. Purchaser of the greatest number for foreign flag operation, aside from Panama, was Great Britain, which country acquired 51 of 527,230 gross tons and 836,828 deadweight tons, while Italy took 20, France—18, and Norway—17.

It is of interest to note that the total deadweight tonnage of T2 type tankers sold by the Maritime Commission, 7,355,401 tons, represents a fleet sixty-five percent greater than that which existed under the American flag before the war, when on September 1, 1939, there were 403 United States tankers of 2,854,583 gross tons and 4,477,100 deadweight tons, of 1,000 gross tons each and over. At that time there were in existence throughout the world 1,700 tankships, including whaling tankers, of 11,485,161 gross tons and 17,235,200 deadweight tons, so that the fleet sold by the Maritime Commission is equal to almost one-half of the entire prewar world tankship fleet.

Excluding the tankers owned or controlled by the military forces of the United States, T2 type tankers now comprise in deadweight tonnage more than one-half of the tanker tonnage owned in the United States by the Maritime Commission and private interests. Including only vessels of 1,000 gross tons and over, there existed under the American flag on January 1, 1949, 521 tankships of 4,652,300 gross tons and 7,436,000 deadweight tons. As of May 1, 1949, private interests in the United States owned 462 tankers registered under the American flag, including only seagoing tankers of 2,000 gross tons and over. Of these, 240 of 2,469,026 gross tons and 3,947,781 deadweight tons are T2 type tankers, averaging five years of age, while other types built both before and after the war total 222 of 1,924,079 gross tons and 3,044,147 deadweight tons. It will be

(Continued on Page 102)

Number, Tonnage and Horsepower of Turbo-Electric Drive Type Tankers Constructed During the War for the Maritime Commission

Builder	T2-SE-A1 (a)				T2-SE-A2 and A3 (b)				Totals			
	No.	Gross tons	Deadweight tons	S.H.P.	No.	Gross tons	Deadweight tons	S.H.P.	No.	Gross tons	Deadweight tons	S.H.P.
Alabama D. D. & S. B. Co. Mobile, Ala.	102	1,037,544	1,690,536	738,480	...	.....	.....	.....	102	1,037,544	1,690,536	738,480
Kaiser Company, Swan Island Yard Portland, Ore.	147	1,535,748	2,453,610	1,064,280	...	.....	.....	.....	147	1,535,748	2,453,610	1,064,280
Marinship Corporation Sausalito, Cal.	34	354,882	558,294	246,160	44	464,782	721,927	440,000	78	819,664	1,280,221	686,160
Sun Shipbuilding & D. D. Co. Chester, Pa.	198	2,029,863	3,247,661	1,433,520	...	.....	.....	.....	198	2,029,863	3,247,661	1,433,520
TOTALS	481	4,958,037	7,950,101	3,482,440	44	464,782	721,927	440,000	525	5,422,819	8,672,028	3,922,244
Constructed Each Year												
1942	22	224,021	365,500	159,280	...	.....	.....	.....	22	224,021	365,500	159,280
1943	128	1,315,392	2,124,498	926,720	5	51,507	82,238	50,000	133	1,366,899	2,206,736	976,720
1944	189	1,952,149	3,123,555	1,368,360	32	340,231	525,134	320,000	221	2,292,380	3,648,689	1,688,360
1945	142	1,466,475	2,336,548	1,028,080	7	73,044	114,555	70,000	149	1,539,519	2,451,103	1,098,080
Constructed on												
Atlantic Coast	198	2,029,863	3,247,661	1,433,520	...	.....	.....	.....	198	2,029,863	3,247,661	1,433,520
Gulf Coast	102	1,037,544	1,690,536	738,480	...	.....	.....	.....	102	1,037,544	1,690,536	738,408
Pacific Coast	181	1,890,630	3,011,904	1,310,440	44	464,782	721,927	440,000	225	2,355,412	3,733,831	1,750,440

(a) 7,240 horsepower maximum.
(b) 10,000 horsepower maximum.

SOURCE: The Bulletin, American Bureau of Shipping.

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Klaveness Line



Knutsen Line



Lamport & Holt Line, Ltd.



Leif Hoegh & Co.



Linea Sud Americana, Inc.



Lloyd Brasileiro



Luckenbach SS Co.



Mystic Steamship Div.



National Bulk Carriers
Phoenix SS
Royal Rotterdam Lloyd



Naviera Aznar, S. A.



R. A. Nicol & Co.



North American Shipping & Trading Co., Inc.



North Atlantic & Gulf SS Co., Inc.



Stanolind Marine Transport Co.



Orion Shipping & Trading Co., Inc.



Overseas Tankship Corp.



Pacific-Atlantic
Quaker-States Line



Pacific-Australia Direct Line
Pacific Orient Express Line
Transatlantic SS Co.



Pacific Far East Line



Pacific Islands Transport Line



Thorden Lines



Permanente SS Corp.



Petroleum Navigation



Pocahontas SS Co.



Polarus SS Co. Inc.



Chester A. Poling, Inc.



Pittston Marine Corp.



Pope & Talbot Lines
Pacific-Argentine-Brazil Line



Wilhelmsen-Gulf Line



Royal Netherlands SS



Sabine Transportation Co.
Sabine Towing Co.



Salen Skaugen Line



Scandinavian-American Line



Schafer Bros.



Seas Shipping
Robin Line



Spentonbush Fuel Trans.



Sprague SS



Standard Fruit & SS



Stanhope Line



Standard of California Marine Department



Standard Oil Company (New Jersey)



Standard-Vacuum Oil Co.
Petroleum Shipping Co., Ltd.
Oriental Trade & Transp. Co., Ltd.



Tide Water Associated Oil Co.



M. & J. Tracy, Inc.



The Tidewater Commercial Company, Inc.



Transmarine Navigation



Trinidad Corp.



Union Oil of Calif.



The Union Sulphur Co., Inc.



West Coast Line



Westfal-Larsen Co. Line



West India SS Co.

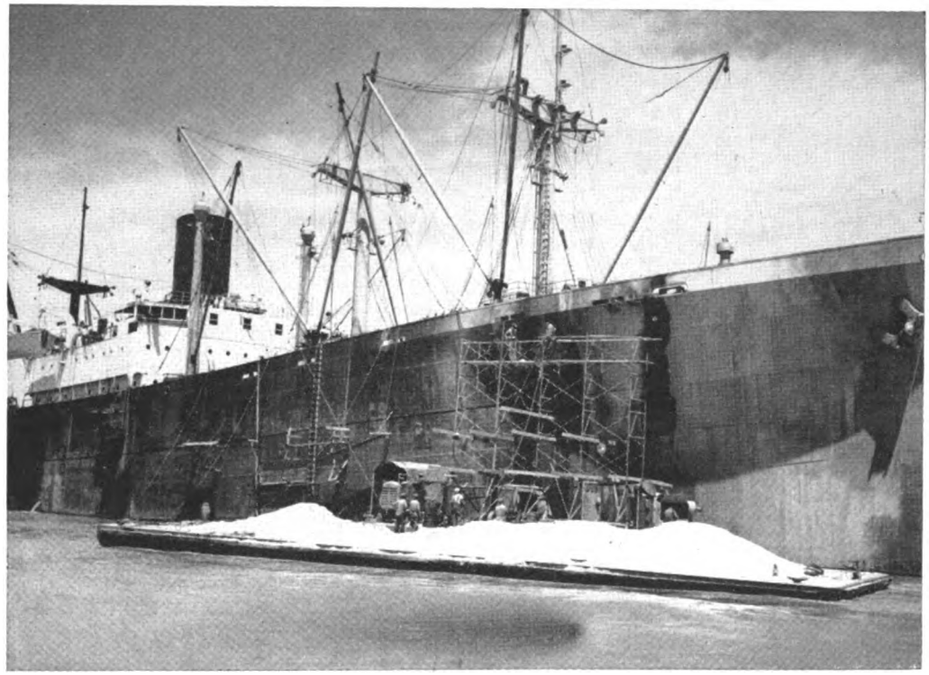


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SANDBLASTING INCLUDED



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T2-SE-A1 Type Turbo-Electric Drive Tankers Purchased from the Maritime Commission by American Interests for Operation Under the American Flag Under the Terms of the Merchant Ship Sales Act of 1946, or the Merchant Marine Act of 1936, or PDX-Damaged Sales, and Titles Transferred

Purchaser / New and Old Name of Ship	Year Built	Gross Tons	Deadweight Tons
American Eastern Corp.			
Queenston Heights	1943	10,448	16,738
American Overseas Tanker Corp. (United Tanker Corp.)			
Antelope Hills (Trans-World Maritime Corp.)	1944	10,441	16,317
Meacham (National Tanker Corp.)	1944	10,448	16,574
Kettleman Hills (Oceanic Maritime Corp.)	1944	10,441	16,600
American Pacific S.S. Co.			
Ampac California	1943	10,195	16,335
ex Lookout Mountain			
Ampac Washington	1943	10,448	16,551
ex Coquille			
American Republics Corp. (Petroleum Navigation Co.)			
Republic	1944	10,172	16,615
ex El Caney			
Federal	1944	10,441	16,600
ex Baldwin Hills			
American Trading & Production Corp.			
American Trader	1945	10,296	16,300
ex Marne			
Baltimore Trader	1945	10,296	16,290
ex Port Republic			
Crown Trader	1945	10,296	16,275
ex Carnifex Ferry			
Texas Trader	1944	10,441	16,600
ex Buena Vista Hills			
American Viking Corp.			
Saint Christopher	1943	10,172	16,615
ex Skull Bar			
Destiny	1945	10,441	16,600
ex Domingues Hills			
American Marine Corp.			
Battle Rock	1944	10,448	16,583
Camp Namanu	1944	10,448	16,461
Stony Point	1943	10,448	16,615
Anchor Oil Co. (Donner Foundation, Inc.)			
Torrance Hills	1945	10,441	16,600
Atlantic Refining Co.			
Atlantic Dealer	1945	10,296	16,600
ex Honey Hill			
Atlantic Exporter	1945	10,296	16,600
ex Fort Casper			
Atlantic Mariner	1945	10,296	16,600
Atlantic Ranger	1945	10,249	16,600
Atlantic Refiner	1945	10,296	16,600
Atlantic Trader	1945	10,296	16,600
Barber Asphalt Co. & Trinidad Corp.			
Caribbean	1942	10,169	16,572
Fort Mercer	1945	10,246	16,532
New Market	1945	10,296	16,920
Clarke's Wharf	1945	10,296	16,284
Fruitvale Hills	1945	10,385	16,636
Redstone	1945	10,296	16,280
Tillamook	1944	10,448	16,558
Lyon's Creek	1944	10,296	16,295
Bernuth Lembcke Co.			
Tydol Bayonne	1944	10,296	16,285
ex Catham			
Fullerton Hills	1945	10,441	16,453
Coastal Oil Co.			
River Raisin	1943	10,448	16,738
The California Oil Co.			
Fort Mims	1945	10,172	16,697
Rock Landing	1945	10,172	16,615
Kettle Creek	1944	10,296	16,293
J. M. Carras, Inc.			
Jamee Island	1944	10,317	16,286
Trinity	1943	10,172	16,615
ex Washita			
Cities Service Oil Co.			
Abiqua	1943	10,172	16,700
Council Grove	1945	10,172	16,700
French Creek	1944	10,296	16,800
Lone Jack	1944	10,297	16,500
Paoli	1944	10,296	16,260
Cantigny	1945	10,296	16,293
Bradford Island	1945	10,448	16,412
Salem Maritime	1945	10,448	16,435
Bent's Fort	1945	10,448	16,623
Fort Hoskins	1945	10,448	16,639
Government Camp	1945	10,448	16,435
Royal Oak	1945	10,296	16,282
Logan's Fort	1945	10,296	16,288
Colonial Navigation Co.			
Pueblo	1943	10,195	16,527
Conoco Marine Corp.			
Marine Leader	1945	10,172	16,765
ex Ponca City			
ex Black River			
Earley-Walter, Inc. (Ventura S. S. Corp.)			
Ventura	1945	10,441	16,600
ex Ventura Hills			
Flanigan, Loveland, Inc.			
Pequot Hill	1943	10,448	16,738
Fordam Trading Corp.			
Sweetwater (Metro Petroleum Shipping Co.)	1943	10,172	16,615
Chryse Jane, (Cape Horn S. S. Corp.)	1945	10,441	16,600
ex Midway Hills			
Gulf Oil Corp.			
Gulfwell	1944	10,448	16,432
ex Fort William			
Gulfray	1944	10,296	16,255
ex Bushy Run			
Gulfstream	1943	10,195	16,615
ex Cross Keys			
Gulfmoon	1945	10,266	16,533
ex Fort Mifflin			
Gulflight	1943	10,195	16,538
ex Jalapa			
Gulfhorn	1945	10,296	16,276
ex Roxbury Hill			
Gulfdawn	1943	10,195	16,527
ex San Antonio			
Gulfshore	1945	10,296	16,292
ex Somme			
Gulftrade	1943	10,195	16,325
ex Spottsylvania			
Gulfhaven	1944	10,296	16,265
ex Spring Hill			
Gulfbrand	1944	10,296	16,280
ex Drewry's Bluff			
Gulfmills	1944	10,296	16,289
ex Musgroves Mills			
Gulfscout	1944	10,296	16,308
ex Fort Schuyler			
Gulfland	1944	10,296	16,600
ex Moor's Field	1945	10,172	16,420
Gulfpeak	1945	10,172	16,761
ex Golden Hill			
Gulfpass	1944	10,172	16,448
ex Raton Pass			
Gulfswamp	1943	10,195	16,426
ex Wahoo Swamp			
Gulfmeadows	1945	10,172	16,450
ex Great Meadows			
Gulfkey	1943	10,195	16,330
ex Texas City			
ex Kathio			
Gulfvictor	1944	10,448	16,600
ex Vicksburg			
Gulfglow	1943	10,195	16,750
ex Nehalem			
Jenny Mfg. Co.			
Charles S. Jenny	1944	10,172	16,615
ex Seven Pines	1943	10,172	16,615
Independent Tankships, Inc.	1943	10,172	16,615
Fort Fetterman	1943	10,172	16,615
Birch Coulie	1943	10,172	16,615
Pine Ridge	1943	10,195	16,427
Red Canyon	1943	10,172	16,615
Crown Point	1943	10,172	16,615
Powder River	1943	10,172	16,615
Quemado Lake	1943	10,172	16,615
Spirit of Liberty			
ex Little Big Horn			
Keystone Shipping Co.	1943	10,195	16,428
Atlantic Traveler			
ex Murfreesboro			
Keystone Tank Ship Corp.	1942	10,172	16,700
Bennington	1942	10,172	16,700
Bunker Hill	1942	10,172	16,700
Cherry Valley	1942	10,172	16,700
Monmouth	1942	10,172	16,800
Ticonderoga	1944	10,317	16,296
Catawba Ford			
Charles Kurz & Co.	1943	10,195	16,800
Gaines Mill	1943	10,409	16,700
Mill Spring	1943	10,195	16,425
Perote	1944	10,296	16,261
Tullahoma			
Marine Transport Group	1943	10,422	16,615
Conoco Denver			
ex Fort Washington	1943	10,448	16,738
Ponca City			
ex Fort Henry			
Mathiasen's Tanker Industries	1944	10,172	16,615
Ivy (Cape Horn S. S. Corp.)			
ex Cayuse	1943	10,448	16,738
New London (Artic Tankers, Inc.)			
National Bulk Carriers, Inc.	1945	9,179	15,460
Pan Georgia			
ex Gold Creek (shortened)	1943	10,172	16,615
Hat Creek	1944	10,448	16,421
Battle Mountain	1944	10,448	16,738
Joshua Tree	1945	10,172	16,457
Kaposia	1945	10,266	16,520
Trimbles Ford	1945	10,441	16,443
Whittier Hills	1944	10,448	16,443
Fort Charlotte	1944	10,448	16,582
Pendleton	1943	10,172	16,615
Evans Creek	1943	10,172	16,615
Wagon Box	1943	10,230	16,304
Five Forks	1944	10,448	16,600
Silver Peak	1943	10,195	16,600
Fisher's Hill	1944	10,172	16,600
Callabee			
Nautilus Shipping Corp. (J. M. Carras, Inc.)	1945	10,441	16,408
Captain John D. P.			
ex Potrero Hills	1945	10,441	16,600
Michael			
ex Puente Hills			
North American Shipping & Trading Co.	1944	10,172	16,492
Monitor			
ex San Juan Hill	1944	10,172	16,414
Mermaid			
ex Little Butte	1945	10,172	16,430
Merrimac			
ex Phantom Hill	1945	10,172	16,406
Memory			
ex Pit River	1945	10,296	16,293
Jeanny			
ex Allatoona	1943	10,195	16,326
Seven Seas			
ex Harpers Ferry			
Pacific Tankers, Inc.	1944	10,441	16,344
Montebello Hills	1944	10,441	16,383
McKittrick Hills			
Paco Tankers, Inc.	1943	10,195	16,700
Chancellorsville	1943	10.399	16,700
Fredericksburg	1943	10,195	16,800
Kittanning	1943	10,401	16,700
Perryville	1943	10,457	16,700
Petersburg	1943	10,448	16,738
Northfield			
Pan American Petroleum & Transport Co.	1943	10,195	16,514
Pan New York			
ex Brandy Station	1945	10,172	16,514
Pan Pennsylvania			
ex Piqua	1945	10,172	16,424
Fort Pitt	1943	10,195	16,441
Pan Carolina			
ex Appomattox			
Paragon Oil Co.	1943	10,448	16,738
Fort Moultrie	1943	10,448	16,738
Fort Stephenson			
Petrol Tanker Industries (Terminal Tanker Industries, Inc.)	1943	10,195	16,415
Bull Run	1944	10,172	16,615
Four Lakes	1944	10,172	16,462
The Cabins	1943	10,172	16,615
Julesburg			
Richfield Oil Corp.	1945	10,448	16,633
Coxcomb Hill			
Sabine Transportation Co.	1944	10,296	16,260
R. P. Smith			
ex Edge Hill	1945	10,441	16,397
Signal Hills			
Ships, Inc.	1945	10,296	16,612
Winter Hill	1945	10,172	16,761
Archers Hope			

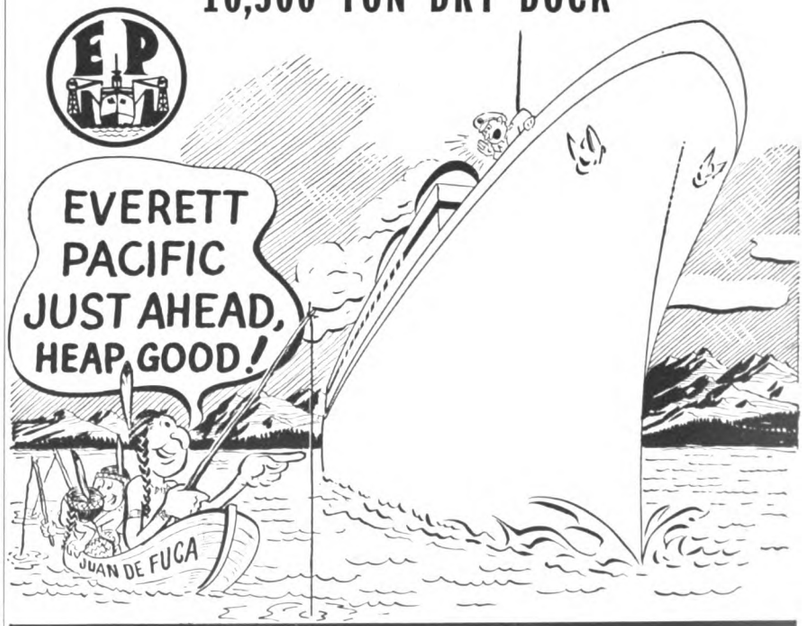
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T2-SE-A1 Type Turbo-Electric Drive Tankers Purchased from the Maritime Commission by American Interests for Operation Under the American Flag Under the Terms of the Merchant Ship Sales Act of 1946, or the Merchant Marine Act of 1936, or PDX-Damaged Sales, and Titles Transferred

Purchaser / New and Old Name of Ship	Year Built	Gross Tons	Deadweight Tons
Socony Vacuum Oil Co.			
Calusa	1942	10,172	16,800
Colina	1943	10,198	16,800
Conastoga	1943	10,198	16,800
Southeastern Oil Co.			
Kern Hills	1945	10,441	16,409
Southern Trading Co.			
Atlantic Voyager	1944	10,172	16,615
ex Wyoming Valley			
Atlantic Shipper	1944	10,172	16,615
ex Platte Bridge			
Atlantic Transporter	1945	10,172	16,759
ex Ninety-Six			
Atlantic Producer	1944	10,172	16,455
ex Pocket Canyon			
Atlantic Importer	1945	10,441	16,600
ex Sunset Hills			
Standard Oil Co. of Cal.			
H. D. Collier	1945	10,246	16,500
J. H. MacGaregill	1945	10,246	16,500
J. L. Hanna	1945	10,246	16,500
Idaho Falls	1944	10,448	16,419
Fort Clatsop	1944	10,448	16,419
Standard Oil Co. of Indiana (Stanolind Marine Transport Co.)			
R. E. Wilson	1943	10,195	16,436
ex Monocacy			
A. W. Peake	1944	10,172	16,615
ex Wolf Mountain			
F. O. Prior	1943	10,172	16,615
ex Buffalo Wallow			
R. F. McConnell	1943	10,172	16,615
ex Fort Laramie			
Standard Oil Co. of New Jersey			
Esso Camden	1944	10,297	16,600
Esso Charlotte	1944	10,296	16,600
ex Malvern Hills			
Esso Cumberland	1944	10,296	16,600
ex Fort Cumberland			
***Esso Elizabeth**	1944	10,296	16,600
ex Frenchtown			
Esso Greenville	1944	10,296	16,600
ex Chadd's Ford			
***Esso Knoxville**	1944	10,296	16,600
ex Blackstock's Ford			
Esso Manhattan	1942	10,173	16,800
Esso Memphis	1944	10,297	16,600
Esso New Haven	1944	10,318	16,600
Esso Norfolk	1942	10,170	16,600
Esso Parkersburg	1944	10,317	16,600
ex Fort Cornwallis			
Esso Paterson	1942	10,170	16,700
ex Germantown			
Esso Portland	1944	10,318	16,600
***Esso Portsmouth**	1944	10,296	16,600
ex Sag Harbor			
Esso Reading	1944	10,296	16,600
ex Tampico			
Esso Roanoke	1944	10,297	16,600
Esso Scranton	1944	10,297	16,600
Esso Springfield	1944	10,297	16,600
Esso Utica	1944	10,297	16,600
Esso Wilmington	1942	10,170	16,700
Esso Greensboro	1943	10,195	16,530
ex Molino del Rey			
Esso Bridgeport	1945	10,172	16,446
ex Spirit Lake			
Esso Worcester	1945	10,448	16,518
ex Multnomah			
Esso Burlington	1943	10,172	16,615
ex Canyon Creek			
Esso Wheeling	1944	10,172	16,460
ex Bemis Heights			
Esso Ashville	1944	10,448	16,564
ex Newberg			
Esso Linden	1944	10,296	16,259
ex Prairie Grove			
Esso Allentown	1943	10,448	16,738
ex Bladensburg			
Esso Shreveport	1943	10,195	16,428
ex Front Royal			
Esso Everett	1944	10,448	16,425
ex Castle Pinckney			
*—Subsequently transferred to Panama flag.			
Esso Binghamton	1945	10,172	16,410
ex Fort Robinson			
Standard-Vacuum Oil Co.			
Stanvac Singapore	1944	10,448	16,415
ex Grand Mesa			
Stanvac Brisbane	1944	10,448	16,459
ex Chalmette			
Stanvac Hong Kong	1944	10,448	16,417
ex Black Hills			
Stanvac Bombay	1944	10,448	16,479
ex Elk Basin			
Stanvac Durban	1944	10,448	16,410
ex Glacier Park			
State Fuel Co.			
W. E. Downing	1945	10,441	16,530
ex Huntington Hills			
Sun Oil Co.			
Mercury Sun	1944	10,296	16,610
ex Point Pleasant			
Sun Oil	1944	10,296	16,607
ex Waxhaws			
Michigan Sun	1942	10,172	16,615
ex White Plains			
Ohio Sun	1943	10,195	16,439
ex Kenesaw Mountain			
Maryland Sun	1944	10,296	16,285
ex Cedar Mountain			
Louisiana Sun	1943	10,198	16,615
ex Palo Alto			
Sword Line			
Coalinga Hills	1944	10,441	16,364
Tanker Sag Harbor Corp.			
Petrolite	1944	10,296	16,300
ex Hanging Rock			
The Texas Co.			
Buena Vista	1943	10,198	16,800
Cerro Gordo	1943	10,195	16,700
Churubusco	1943	10,195	16,800
Contreras	1943	10,195	16,700
South Mountain	1944	10,296	16,600
Vera Cruz	1943	10,198	16,700
Williamsburg	1944	10,296	16,600
New Jersey	1944	10,296	16,600
ex Lake Erie			
Illinois	1944	10,296	16,800
ex San Pasqual			
North Carolina	1944	10,551	16,283
ex Briar Creek			
South Carolina	1944	10,551	16,283
ex Diamond Island			
Louisiana	1944	10,317	16,289
ex Kernstown			
Alabama	1944	10,296	16,262
ex Hubbardton			
Tide Water Associated Oil Co.			
Robert E. Hopkins	1945	10,296	16,800
ex Camp Charlotte			
Samuel Q. Brown	1944	10,296	16,800
ex Chesapeake Capes			
Byron D. Benson	1944	10,296	16,300
ex Glorietta			
David McKelvy	1944	10,296	16,300
ex Groveton			
William F. Humphrey	1944	10,296	16,600
ex Black Jack			
Frank Haskell	1944	10,296	16,285
ex Rich Mountain			
Trinidad Corp.			
La Brea Hills	1945	10,441	16,600
Union Oil Co. of Cal.			
Lompoc	1945	10,448	16,590
ex Jordan Valley			
Oleum	1945	10,448	16,423
ex Big Bend			
Santa Paula	1945	10,296	16,800
Union Sulphur Co.			
Herman F. Wilson	1943	10,448	16,738
ex Oregon Trail			
William A. M. Burden	1943	10,448	16,738
ex Brookfield			
U. S. Navigation Co.			
Fort Meigs	1943	10,448	16,738
U. S. Petroleum Carriers, Inc.			
Fort Bridger	1944	10,172	16,615
Lake George	1943	10,195	16,432
Camas Meadows	1943	10,172	16,615
Arickaree	1943	10,172	16,615
U. S. Waterways Corp. (Amer. Tramp Shipping Development Corp.)			
Stony Creek	1943	10,448	16,738

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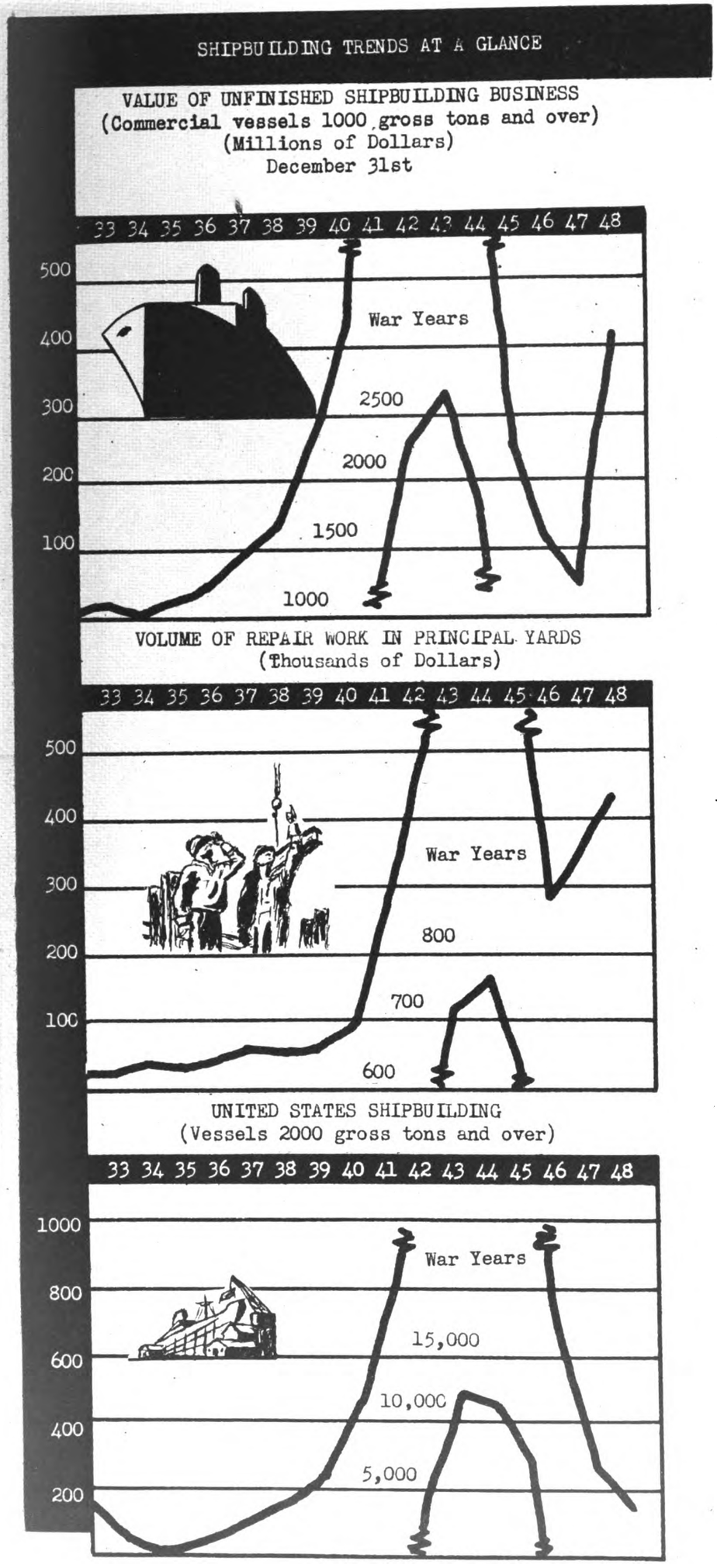
Number, Tonnage and Horsepower of T2-SE-A1 Type Turbo-Electric Drive Tankers Sold by the U. S. Maritime Commission and Titles Transferred, Arranged by Flag to Which Sold, and Otherwise Disposed Of

Flag	Number	Gross Tons	Deadweight Tons	Horsepower
United States	244	2,510,210	4,014,181	1,766,560
Belgium	1	10,296	16,287	7,240
Canada	8	82,983	131,201	57,920
France	18	186,256	296,653	130,320
Great Britain	51	527,230	836,828	369,240
Greece	7	72,874	115,569	50,680
Italy	20	206,057	331,139	144,800
Netherlands	5	52,060	82,008	36,200
Norway	17	175,537	279,887	123,080
Panama	71	733,119	1,168,971	514,040
Turkey	1	10,448	16,738	7,240
Union of South Africa	2	20,896	33,353	14,480
Uruguay	2	20,592	32,586	14,480
Totals	447	4,608,558	7,355,401	3,237,290
Total—Foreign	203	2,098,348	3,341,220	1,470,730
Number lost	12	123,600	209,862	86,880
Number scrapped	6	61,800	104,946	43,440
Under military control	16	164,079	279,892	115,840
Number constructed	481	4,958,037	7,950,101	3,482,440

T2-SE-A1 Type Turbo-Electric Drive Tankers Purchased from the Maritime Commission by American and Foreign Interests for Operation Under Foreign Flags Under the Terms of the Merchant Ship Sales Act of 1946 and Titles Transferred

Flag and Name of Ship	Year Built	Gross Tons	Deadweight Tons
Belgium			
Salmon Falls	1945	10,296	16,287
Canada			
Fort Donelson	1943	10,448	16,738
Paloma Hills	1945	10,441	16,421
Pinnacles	1944	10,448	16,408
Rincon Hills	1944	10,441	16,384
Blackwater	1944	10,296	16,287
Chrysler's Field	1944	10,296	16,255
Boundbrook	1944	10,317	16,285
Port Royal	1944	10,296	15,423
France			
Scott's Bluff	1944	10,448	16,456
Montezuma Castle	1944	10,448	16,428
Trailblazer	1944	10,448	16,455
The Dalles	1944	10,448	16,581
Ochoco	1944	10,448	16,577
Grand Teton	1944	10,448	16,421
Donner Lake	1944	10,448	16,456
Coulee Dam	1944	10,448	16,461
Table Rock	1943	10,448	16,554
Camp Defiance	1944	10,172	16,412
Sandy Lake	1945	10,172	16,412
Sedan	1945	10,296	16,285
Wood Lake	1944	10,172	16,615
Dobbytown	1945	10,172	16,429
Wilson's Creek	1944	10,172	16,615
White Bird Canyon	1944	10,172	16,488
Rainier	1944	10,448	16,578
Fort Wood	1944	10,448	16,600
Great Britain			
Rye Cove	1945	10,249	16,523
Smokey Hill	1944	10,448	16,441
Fort Matanzas	1944	10,448	16,410
Council Crest	1945	10,448	16,429
Fort Jupiter	1945	10,296	16,356
El Morro	1944	10,448	16,423
Orchard Knob	1945	10,296	16,348
Fort Cheswell	1945	10,296	16,349
Fort Frederica	1945	10,448	16,432
Capitol Reef	1944	10,448	16,431
Hovenweep	1944	10,448	16,424
Forbes Road	1944	10,448	16,448
Modoc Point	1945	10,448	16,425
Chaco Canyon	1944	10,448	16,423
Chatterton Hill	1944	10,172	16,426
Verendrye	1944	10,448	16,482
Mesa Verde	1944	10,448	16,441
Fort Raleigh	1945	10,448	16,436
Stones River	1945	10,448	16,435
Halls of Montezuma	1945	10,448	16,539
Bandelier	1944	10,448	16,441
White Sands	1945	10,448	16,423
Fort Winnebago	1944	10,448	16,448
Silver Creek	1945	10,448	16,526
Swan Island	1944	10,448	16,430
Tuolumne Meadows	1944	10,448	16,461
Chisholm Trail	1945	10,448	16,450
Bryce Canyon	1944	10,448	16,432
Laurel Hill	1944	10,448	16,449
Horseshoe	1944	10,172	16,459
Mobile Bay	1945	10,172	16,417
Red Bank	1944	10,172	16,437
Cottonwood Creek	1944	10,172	16,404
Fort Stevens	1944	10,172	16,422
Cahawba	1944	10,172	16,489
Cobble Hill	1945	10,296	16,287
Rouge River	1944	10,172	16,408
Crow Wing	1945	10,172	16,411
Palo Duro	1945	10,172	16 407
Ackia	1945	10,172	16,431
La Mesa	1944	10,296	16,257
Turkey Island	1944	10,296	16,285
Ridgefield	1944	10,296	16,288
Champion's Hill	1944	10,296	16,263
Santiago	1944	10,317	16,285
Turner's Cap	1945	10,296	16,363
Valverde	1944	10,296	16,258
Wauhatchie	1944	10,296	16,253
Mauvilla	1944	10,296	16,288
Sandy Creek	1944	10,296	16,282
Greece			
Fort Niagara	1943	10,193	16,532
Tumacacori	1944	10,448	16,466
Elk Hills	1944	10,441	16,285
Grande Ronde	1943	10,448	16,551
W. L. R. Emmet	1944	10,448	16,419
White Oak	1943	10,448	16,738
Klamath Falls	1943	10,448	16,578
Italy			
York	1943	10,448	16,600
Crater Lake	1944	10,448	16,546
Pulpit Rock	1944	10,448	16,430
Rosebud	1943	10,172	16,615
Manassas	1943	10,195	16,316
Corvallis	1943	10,448	16,738
Schenectady	1943	10,448	16,738
Ball's Bluff	1943	10,195	16,420
Shiloh	1943	10,195	16,426
Autossee	1944	10,172	16,615
Corinth	1943	10,195	16,431
Sharpsburg	1943	10,195	16,441
Fort Erie	1943	10,448	16,738
Plattsburg	1943	10,448	16,738
Tule Canyon	1944	10,172	16,615
Chickamauga	1943	10,195	16,422
Italy (continued)			
Fairfax	1943	10,195	16,410
The Yakima	1944	10,172	16,409
Broad River	1943	10,448	16,738
Quebec	1943	10,420	16,615
Netherlands			
Inglewood Hills	1944	10,441	16,401
Wheeler Hills	1945	10,441	16,467
Hobkirk's Hill	1944	10,296	16,289
Norway			
Lundy's Lane	1943	10,448	16,783
Belridge Hills	1945	10,441	16,430
Fallen Timbers	1943	10,448	16,738
Santa Maria Hills	1945	10,441	16,413
Elwood Hills	1945	10,441	16,421
Mechanicsville	1943	10,448	16,738
Bear Paw	1944	10,172	16,431
Marin Hills	1945	10,385	16,739
Lost Hills	1944	10,441	16,293
The Cottonwoods	1944	10,172	16,444
Honningsvaag	1945	10,172	16,422
Hammerfest	1945	10,296	16,314
Kirkenes	1944	10,172	16,403
Finnmark	1945	10,296	16,280
Hegra	1944	10,296	16,307
Nordahl Grieg	1944	10,172	16,479
Karsten Wang	1944	10,296	16,297
Coyote Hills	1945	10,441	16,600
Sante Fe Hills	1945	10,441	16,600
Panama			
Chantilly	1943	10,195	16,341
Steens Mountain	1945	10,448	16,420
Wolf Creek	1944	10,448	16,474
Missionary Ridge	1943	10,195	16,338
Fort Massiac	1945	10,296	16,360
Barren Hill	1944	10,172	16,428
Heron's Bridge	1945	10,296	16,375
Grants Pass	1945	10,448	16,426
Champoeg	1943	10,448	16,738
Winchester	1943	10,195	16,440
Chapultepec	1943	10,195	16,527
Pawnee Rock	1945	10,172	16,408
Charlestown	1943	10,195	16,530
War Bonnet	1945	10,172	16,440
Snake River	1945	10,448	16,622
Opequon	1943	10,195	16,323
McClellan Creek	1943	10,172	16,500
Blue Licks	1945	10,172	16,433
Chicaca	1945	10,172	16,432
Fort Ridgely	1944	10,172	16,408
Moccasin Gap	1945	10,172	16,764
Wagon Mound	1945	10,172	16,430
Drapers Meadows	1945	10,296	16,286
Grand River	1944	10,172	16,401
Cabusto	1945	10,172	16,767
Meuse Argonne	1945	10,296	16,290
Camp Union	1945	10,296	16,295
Sideling Hill	1945	10,172	16,407
Saguaro	1945	10,448	16,443
Grays Harbor	1945	10,448	16,526
Chemawa	1945	10,448	16,448
New Echota	1945	10,448	16,413
Fort George	1943	10,448	16,738
Owyhee	1943	10,448	16,577
Umatilla	1943	10,448	16,738
Yamhill	1943	10,448	16,555
Gervais	1943	10,448	16,738
Fort Christina	1945	10,448	16,650
Quaker Hill	1944	10,172	16,398
Sunset	1945	10,448	16,420
Paulus Hook	1944	10,172	16,430
Carlsbad	1945	10,448	16,428
Beaver Dam	1944	10,172	16,615
Warrior Point	1944	10,448	16,420
Victory Loan	1945	10,448	16,631
Celilo	1944	10,448	16,548
White River	1944	10,172	16,615
Cannon Beach	1945	10,448	16,572
Fort Lane	1945	10,448	16,435
North Point	1944	10,172	16,432
Wallowa	1943	10,448	16,567
Fort Stanwix	1945	10,448	16,449
Sullys Hill	1945	10,448	16,447
Kings Canyon	1945	10,448	16,421
Apache Canyon	1944	10,172	16,615
Boonesborough	1945	10,172	16,421
Seneca Castle	1945	10,172	16,615
Pine Bluff	1944	10,296	16,225
Yellow Tavern	1944	10,296	16,253
Rum River	1944	10,296	16,258
Amiens	1945	10,296	16,282
Whitehorse	1944	10,317	16,298
Castle's Woods	1945	10,296	16,273
Choctaw Trail	1945	10,448	16,600
Tonto	1944	10,448	16,600
Hood River	1944	10,448	16,600
Casa Grande	1944	10,448	16,600
Pilot Butte	1944	10,448	16,600
Pipe Spring	1944	10,448	16,600
Cedar Breaks	1944	10,448	16,600
Platt Park	1945	10,448	16,600
Turkey			
Fort McHenry	1943	10,448	16,738
Union of South Africa			
Egg Harbor	1943	10,448	16,615
Hadley	1943	10,448	16,738
Uruguay			
New Hope	1945	10,296	16,295
Trevilian	1945	10,296	16,291

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(Continued from Page 96)

noted that the current privately owned tanker fleet is composed, as to number, of 52 percent T2 type tankers and 48 percent other types.

The current privately owned American flag tanker fleet as a whole averages about 25 percent greater speed per unit and 25 percent greater carrying capacity than the average tanker in the prewar fleet which in 1939 averaged seventeen years of age and was rapidly approaching the obsolescent stage. This fleet is far greater in number and tonnage than the prewar fleet and with its greater speed it can complete more voyages per year, which combined with its greater carrying capacity enables it to transport at least 25 percent more oil per year than the prewar fleet.

The great majority of the American flag privately owned tanker fleet is normally employed in the domestic trades, the number depending upon the seasonal demand for oil. At one period last year, December, there were utilized in the coastwise, intercoastal and noncontiguous trades 278 tankers of 2,469,000 gross tons and 3,956,000 deadweight tons. At the same time there were employed in the foreign trade, including nearby foreign, overseas foreign, and foreign port to foreign port, a total of 187 tankers of 1,856,000 gross tons and 2,976,000 deadweight tons. At the period mentioned there were temporarily inactive, due to major repair work or lack of employment, a total of 25 tankships of 176,000 gross tons and 274,000 deadweight tons.

While during the war the Maritime Commission owned the greatest national tanker fleet in existence, over 650 vessels, today the Government's shipping agency only has in its laid-up fleet sites a total of 26 tankers. Of these, 2 are old prewar-built vessels; 12 are Liberty type tankers of the Z-ET1-S-C3 type; together with 9 of the Diesel drive T1-M-A1 and A2 types, and 3 of the T1-M-BT2 type. Including all types, the Maritime Commission has sold for operation a total of 527 warbuilt tankers of 4,866,647 gross tons, 7,703,599 deadweight tons, and 3,331,050 horsepower. In addition, a few old prewar-built tankers have been sold for operation, these having been acquired by the Maritime Commission in trade-ins for new tankers or requisitioned for title during the war.

Although a considerable number of tankers have been scrapped in the United States and abroad since the end of the war, and a great many were sunk during the war, there are now more tankers in existence throughout the world than ever existed before at any one time. On January 1, 1949 a total of 1,963 tankships of 1,000 gross tons each and over, representing 14,973,800 gross tons and 22,971,200 deadweight tons were afloat throughout the world. This huge fleet of tankers will be further augmented during 1949 and 1950 with the completion of the great fleet of tankships now on order and building in the principal maritime nations. On January 1, 1949 orders were in existence with the shipyards of the world for the construction of 391 tankers of 4,429,517 gross tons and 6,900,000 deadweight tons. However, some units of the current fleet

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will be scrapped and some lost due to shipwreck, etc. At present the tankships now afloat represent about 15 percent of the total number of merchant vessels of all types in existence throughout the world, and more than 22 percent of the total deadweight.

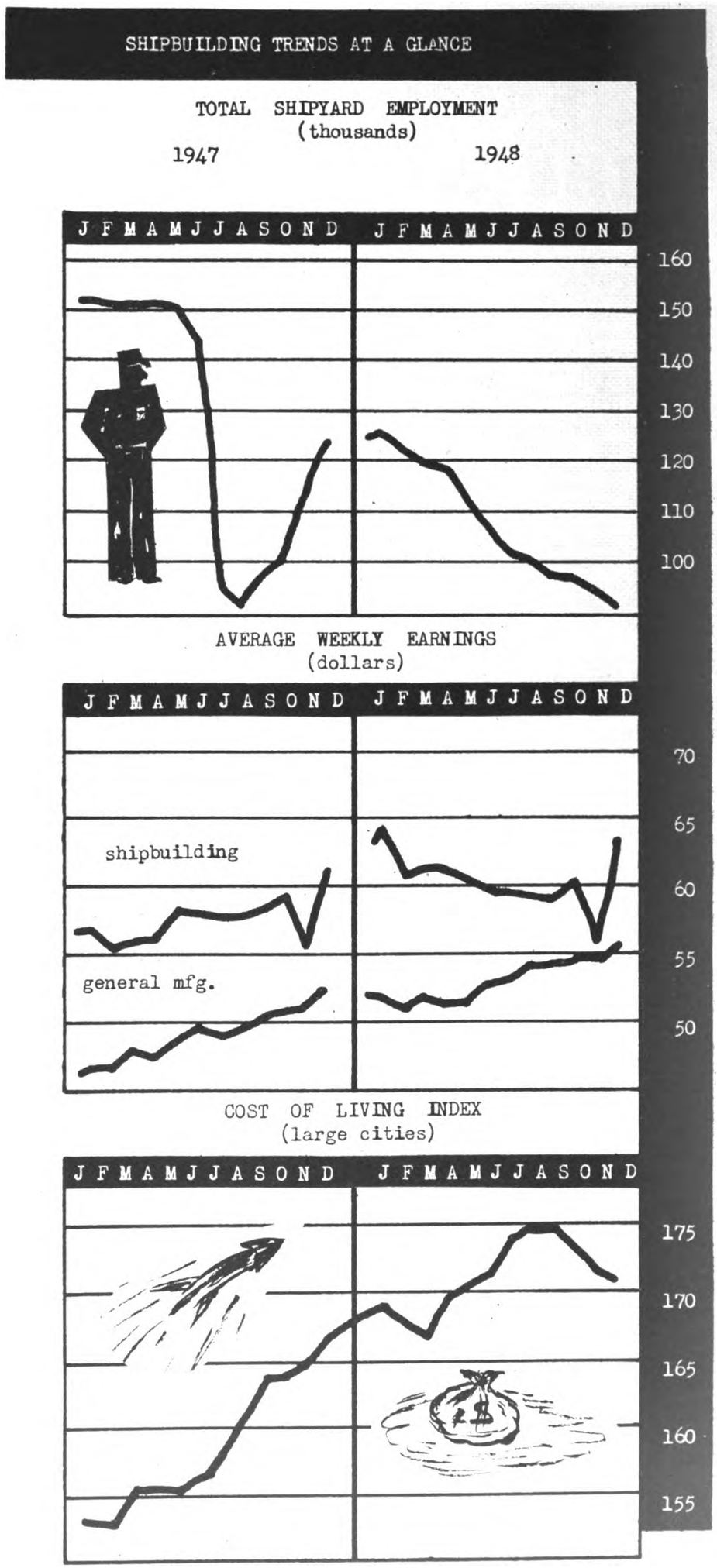
On January 1, 1949, there were 25 privately owned American flag tankships laid up, due principally to lack of employment. With the great number of new tankers now under construction or on order throughout the world, scheduled to be completed by the end of 1950, the question naturally arises whether there will be a surplus of this type of tonnage. However, most of the super-size tankers now on order are being constructed for special purpose utilization, such as to the Near East oil fields. Nevertheless, one has to go back only to the days following World War One to speculate whether history will repeat itself. While the World War One boom in tanker construction, principally in the United States through the medium of the United States Shipping Board, enabled the petroleum industry to catch up with the demand for tanker bottoms, the boom went beyond that, and created a surplus which was acutely felt at intervals during the postwar decade. For instance, on January 1, 1923, seventeen percent of the world's tanker tonnage was tied up. If the current boom in tanker building through the world does create a surplus of tankships by the end of 1950, the shipyards of the maritime nations of the world, and particularly in the United States, will be faced with a very difficult period for a number of years. With the possible cessation of orders for new tankers, there will be little work for the shipyards as there already exists a surplus of tramp cargo tonnage, and by the end of 1950 shipping companies of the world will have accepted delivery of the cargo ships of the liner type now being built. Few American ship operators are in need of additional tonnage of the latter type. This would leave only the possibility of building special design combination passenger and cargo vessels for specific trade routes.

T2 Tankers Constructed by Four Shipyards

The huge fleet of T2 type turbo-electric drive tankers were constructed by four shipyards during 1942, 1943, 1944 and 1945, mass production and duplication enabling the yards to create unheard of construction time records, which will never be equalled again unless another war develops. A total of 481 of this type tanker were built by the Alabama Dry Dock and Shipbuilding Company at Mobile, Alabama; the Kaiser Company, Swan Island Yard, at Portland, Oregon; the Marinship Corporation at Sausalito, California; and the Sun Shipbuilding and Dry Dock Company at Chester, Pennsylvania, with the latter company constructing the greatest number—198. These 481 tankers totaled 4,958,037 gross tons, 7,950,101 deadweight tons, with propulsion machinery aggregating 3,482,440 shaft horsepower.

In addition, 44 tankers of the T2-SE-A2

(Continued on Page 114)



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EXCLUSIVE LOG PREVIEW OF THE WORLD'S MERCHANT FLEETS

A detailed projection of the competing merchant fleets of the world with an analysis of present trends.

Upon completion of vessel construction currently underway or on order, the world's merchant fleet of seagoing vessels of 1,000 gross tons and over will total almost 89 million dwt. or 12% larger than prewar.[1] The world's future dry cargo and combination fleet will total almost 60 million dwt. or about 4% below prewar, while the tanker fleet will total somewhere in the neighborhood of 30 million dwt. or about 74% above the 1939 level. In addition to absolute tonnage increases, there has been an increase in ship speed over prewar, but this advantage has largely been offset by substantially lengthened stays in port.

Although the dry cargo and combination segment of the world's merchant fleet of the future will be somewhat below the 1939 level, most of the current world maritime powers will show significant increases over prewar. This situation results from the fact the merchant fleets of Germany and Japan alone have accounted for a decline of almost 10 million dwt. of these types of vessels (non-tanker tonnage). The privately owned U. S. flag dry cargo, combination, and passenger fleet combined will be increased by slightly over one million dwt. Increases of over one million dwt. over the prewar level have already been recorded by the merchant marines of Canada and Panama.

In spite of the decrease in dry cargo and combination tonnage of Greece, Italy, and Denmark, the non-tanker tonnage of the Marshall Plan Countries, as a whole, will be about a million dwt. or 2% above the prewar level. There has also been and probably will continue to be notable increases in the merchant marines of those countries which are included in the "other" category shown in the accompanying table. These countries include Argentina, half a million dwt. over prewar; Brazil, over 350,000 dwt. above prewar; China, almost 700,000 dwt. above prewar; Honduras, 400,000 dwt. above prewar; Mexico, 120,000 dwt; Poland, 125,000 dwt. and Uruguay, about 100,000 dwt. above prewar. In addition Eire, Iceland, and Switzerland, which had no seagoing merchant fleet prewar, will soon have a combined fleet of 150,000 dwt.

Taking into consideration the completion of the tanker construction program currently underway, the U. S. flag tanker tonnage will be double that of prewar and total 8.5 million dwt. At this level, there will be under U. S. flag close to 30% of the world's tanker tonnage or a 5% greater share of the world's total than was the case in 1939. The Marshall Plan Countries, as a group, led by substantial increases over prewar by Denmark (94%), Greece (261%), Norway (59%), Sweden, (193%), France (93%), and U. K. (57%) will have a tanker fleet of over 15.5 million dwt. or about 5.8 million dwt. and 59% above their prewar level. Other substantial increases will be recorded by virtually every other nation except for those defeated in World War II.

FLEETS IN EXISTENCE JANUARY, 1949

(A) Dry Cargo and Combination—(exclusive of large passenger vessels)

At the beginning of this year, the world's dry cargo and combination vessels had de-

(1) The current maritime picture makes it almost impossible at present to reliably estimate the extent of future vessel retirements. Marine losses are, of course, indeterminate. Both have been excluded from consideration, although they will certainly reduce the size of the world's fleet to some extent. U. S. government owned tonnage has also been excluded from consideration with the exception of a few passenger vessels under bareboat operation.

TABLE 1

Potential Future Size of World's Merchant Fleet*
(Merchant Type Seagoing Vessels of 1,000 Gross Tons and Over Only)

(In thousands of deadweight tons)

COUNTRY	TOTAL			DRY CARGO & COMBINATION[2]			TANKER		
	1939	Future[1]	% Future Above or (below) 1939	1939	Future[1]	% Future Above or (below) 1939	1939	Future[1]	% Future Above or (below) 1939
WORLD TOTAL	**79,138.6**	**88,846.1**	**12.3**	**62,226.5**	**59,501.3**	**(4.4)**	**16,912.1**	**29,344.8**	**73.5**
U. S. Private	10,219.7	15,558.3	52.2	5,961.6	7,020.3	17.8	4,258.1	8,538.0	103.5
Marshall Plan Countries	**46,503.3**	**52,954.7**	**13.9**	**36,707.2**	**37,401.2**	**1.9**	**9,796.1**	**15,553.5**	**58.8**
Belgium	494.0	580.1	17.4	392.8	502.9	28.0	101.2	77.2	(23.7)
Denmark	1,575.8	1,725.7	9.5	1,410.2	1,404.0	(.4)	165.6	321.7	93.7
Eire	.....	70.6	[3]	.....	70.6	[3]	.....	.....	.....
France	2,998.8	3,941.2	31.4	2,539.9	3,054.1	20.2	458.9	887.1	93.3
Greece	2,791.0	1,982.1	(29.0)	2,741.3	1,802.6	(34.2)	49.7	179.5	261.2
Iceland	.....	29.5	[3]	.....	29.5	[3]	.....	.....	.....
Italy	3,910.8	2,907.2	(25.7)	3,328.2	2,144.3	(35.6)	582.6	762.9	30.9
Netherlands	3,424.6	3,759.3	9.8	2,684.6	3,037.8	13.2	740.0	721.5	(2.5)
Norway	6,931.2	9,034.2	30.3	3,800.3	4,065.6	7.0	3,130.9	4,968.6	58.6
Portugal	263.2	625.4	137.6	253.7	546.8	115.5	9.5	78.6	727.4
Sweden	2,033.1	3,213.7	58.1	1,776.1	2,460.3	38.5	257.0	753.4	193.2
Switzerland	.....	71.0	[3]	.....	53.1	[3]	.....	17.9	[3]
Turkey	223.8	325.8	45.6	217.6	292.8	34.6	6.2	33.0	432.3
U. K.	21,857.0	24,688.9	13.0	17,562.5	17,936.8	2.1	4,294.5	6,752.1	57.2
Canada	316.7	1,902.3	500.7	177.4	1,651.7	831.1	139.3	250.6	80.0
Panama	1,105.6	4,794.9	333.7	371.3	1,830.0	392.9	734.3	2,964.9	303.8
Spain	1,051.7	1,498.9	42.5	954.8	1,261.8	32.2	96.9	237.1	144.7
U. S. S. R.	1,597.9	1,788.2	12.0	1,414.7	1,599.8	13.1	183.2	188.4	2.8
Japan	7,145.4	1,680.5	(76.5)	6,529.6	1,414.7	(78.3)	615.8	265.8	(56.8)
Germany	5,177.1	210.9	(95.9)	4,777.8	199.9	(95.8)	399.3	11.0	(97.2)
Others	6,021.2	8,457.4	40.5	5,332.1	7,121.9	33.6	689.1	1,335.5	93.8

*NOTE: Excludes merchant type vessels owned by or to be built for the military services.

[1] Deadweight tonnage percentage relationship of merchant fleets—September, 1939, with existing fleet in January, 1949, plus vessels on order and under construction as of January 1, 1949. No allowance has been made for retirements on marine losses. The data for the columns headed "future fleet" has been taken from Table I and Table III.

[2] Includes all non-tanker tonnage.

[3] Represents an increase from zero in 1939.

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TABLE 2

Merchant Fleets of the World as of December 31, 1948

Number, Gross and Deadweight Tonnage of Seagoing Steam and Motor Merchant Vessels of 1,000 Gross Tons and Over

(Excludes Vessels on the Great Lakes and Inland Waterways and Special Types such as Channel Vessels, Icebreakers, Cable Ships, Etc., and Merchant Vessels owned by any Military Force)

(Tonnage in Thousands)

Flag	Total—All Flags			Combination			Combination-Refrigerated			Freighters			Freighters-Refrigerated			Bulk Carriers			Tankers (Including Whaling Tankers)		
	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.	No.	Gross Tons	DWT.
Total—All Flags	**12,643**	**71,549.2**	**100,703.3**	**1,004**	**6,864.7**	**5,430.7**	**71**	**720.6**	**631.7**	**3,709**	**45,385.0**	**67,259.0**	**227**	**1,446.9**	**1,621.6**	**569**	**1,738.1**	**2,739.1**	**1,963**	**14,973.8**	**22,971.2**
United States[1]	3,560	26,198.9	37,720.9	74	748.7	586.4	7	49.0	33.0	2,840	20,074.2	28,641.0	48	280.1	295.7	70	394.6	728.8	521	4,652.3	7,436.0
British Empire	**3,134**	**18,741.1**	**24,922.9**	**335**	**2,828.3**	**2,064.8**	**48**	**594.6**	**524.0**	**1,879**	**10,047.5**	**14,816.0**	**163**	**879.3**	**1,013.6**	**245**	**593.5**	**919.7**	**524**	**3,787.9**	**5,584.8**
United Kingdom	2,547	16,138.6	21,343.1	239	2,462.7	1,764.7	46	582.1	516.2	1,479	8,155.0	12,024.8	101	871.7	1,006.1	193	468.3	729.2	489	3,598.8	5,302.1
Canada	246	1,346.0	1,850.9	24	82.1	34.7	1	8.3	4.7	170	1,040.6	1,485.6	...	.....	.....	24	48.0	75.3	27	167.0	250.6
Australia	120	420.5	583.7	16	99.8	70.5	..	.....	.....	87	271.2	438.9	...	.....	.....	17	49.5	74.3	.....	.....	.....
New Zealand	46	142.3	161.2	7	32.8	10.6	1	4.2	3.1	30	88.3	124.7	...	.....	.....	7	15.6	21.7	1	1.4	1.1
India	68	324.7	474.3	12	59.0	74.3	..	.....	.....	53	252.7	378.9	...	.....	.....	2	9.6	15.7	1	3.4	5.4
Union of So. Africa	17	106.8	153.6	2	11.2	13.5	..	.....	.....	14	85.2	123.3	...	.....	.....	...	.....	.....	1	10.4	16.8
Pakistan	5	26.6	39.5	.....	.....	.....	..	.....	.....	5	26.6	39.5	...	.....	.....	...	.....	.....	.....	.....	.....
Other Colonies	85	235.6	316.6	35	90.7	96.5	..	.....	.....	41	127.9	200.3	2	7.6	7.5	2	2.5	3.5	5	6.9	8.8
Argentina	111	608.1	871.5	9	37.1	26.7	1	9.6	12.8	63	364.0	554.5	2	4.1	5.0	2	3.1	4.5	34	190.2	268.0
Belgium	71	364.3	513.2	7	57.5	62.4	1	7.1	10.3	58	265.8	390.3	...	.....	.....	1	1.3	2.1	4	32.6	48.1
Brazil	175	655.6	907.0	35	137.2	137.2	..	.....	.....	123	470.5	699.8	...	.....	.....	7	12.1	18.6	10	35.8	51.4
Bulgaria	1	4.2	7.2	.....	.....	.....	..	.....	.....	1	4.2	7.2	...	.....	.....	...	.....	.....	.....	.....	.....
Chile	44	167.0	215.5	9	38.1	44.5	..	.....	.....	20	81.3	103.6	...	.....	.....	13	40.0	57.8	2	7.6	9.6
China	232	707.5	955.9	25	68.2	50.0	..	.....	.....	169	543.4	768.7	3	10.0	14.5	11	22.0	33.2	24	63.9	89.5
Colombia	10	28.1	37.5	.....	.....	.....	..	.....	.....	8	25.0	32.9	...	.....	.....	...	.....	.....	2	3.1	4.6
Costa Rico	1	1.1	1.5	.....	.....	.....	..	.....	.....	1	1.1	1.5	...	.....	.....	...	.....	.....	.....	.....	.....
Cuba	11	25.8	32.1	1	2.5	2.1	..	.....	.....	10	23.3	30.0	...	.....	.....	...	.....	.....	.....	.....	.....
Denmark	286	980.0	1,457.6	28	86.9	77.6	3	4.0	4.7	215	705.2	1,093.2	10	21.4	30.8	14	31.4	49.6	16	131.1	201.7
Dominican Republic	1	3.4	2.2	1	3.4	2.2	..	.....	.....	.....	.....	.....	...	.....	.....	...	.....	.....	.....	.....	.....
Ecuador	3	8.7	11.3	.....	.....	.....	..	.....	.....	3	8.7	11.3	...	.....	.....	...	.....	.....	.....	.....	.....
Egypt	23	92.5	112.6	11	49.7	65.1	..	.....	.....	10	36.2	35.8	1	2.3	3.8	1	4.3	7.9	.....	.....	.....
Eire	14	33.3	52.7	.....	.....	.....	..	.....	.....	13	31.9	51.3	...	.....	.....	1	1.4	1.4	.....	.....	.....
Estonia	12	19.5	27.3	2	3.2	1.9	..	.....	.....	8	12.5	19.6	...	.....	.....	2	3.8	5.8	.....	.....	.....
Finland	165	411.3	628.4	6	10.8	5.7	..	.....	.....	147	343.8	540.0	...	.....	.....	5	9.7	14.2	7	47.0	68.5
France	454	2,493.7	3,209.7	57	536.5	342.0	3	29.6	25.0	268	1,230.9	1,826.6	17	56.6	51.6	53	170.3	244.0	56	469.8	720.5
Germany	63	148.1	210.9	6	20.7	19.6	..	.....	.....	49	104.3	157.0	...	.....	.....	6	16.0	23.3	2	7.1	11.0
Greece	222	1,264.7	1,945.7	9	36.5	28.0	..	.....	.....	193	1,099.6	1,711.8	...	.....	.....	8	23.8	40.8	12	104.8	165.1
Honduras	71	366.8	495.4	1	4.3	2.0	5	21.6	18.1	48	251.5	369.7	13	53.5	48.3	...	.....	.....	4	35.9	57.3
Hungary	1	1.0	1.2	.....	.....	.....	..	.....	.....	1	1.0	1.2	...	.....	.....	...	.....	.....	.....	.....	.....
Iceland	11	22.6	29.5	3	4.0	3.5	1	1.6	1.5	7	17.0	24.5	...	.....	.....	...	.....	.....	.....	.....	.....
Iran	1	7.1	10.4	.....	.....	.....	..	.....	.....	1	7.1	10.4	...	.....	.....	...	.....	.....	.....	.....	.....
Israeli	3	5.6	5.0	1	3.5	1.4	..	.....	.....	2	2.1	3.6	...	.....	.....	...	.....	.....	.....	.....	.....
Italy	329	2,021.4	2,849.2	35	299.6	238.5	..	.....	.....	223	1,213.6	1,822.8	...	.....	.....	5	17.4	28.0	66	490.8	759.9
Japan	289	1,135.8	1,652.8	24	98.8	99.3	..	.....	.....	233	853.7	1,280.2	1	1.5	2.1	2	4.3	5.4	29	177.5	265.8
Latvia	12	27.0	42.3	.....	.....	.....	..	.....	.....	12	27.0	42.3	...	.....	.....	...	.....	.....	.....	.....	.....
Lebanon	2	5.9	9.1	.....	.....	.....	..	.....	.....	2	5.9	9.1	...	.....	.....	...	.....	.....	.....	.....	.....
Mexico	19	98.9	153.6	1	2.9	3.6	..	.....	.....	4	9.4	12.2	...	.....	.....	1	5.5	8.0	13	81.1	129.8
Netherlands	468	2,604.9	3,459.0	89	612.3	572.9	..	.....	.....	284	1,505.9	2,203.2	1	1.7	3.0	1	6.5	10.8	93	478.5	669.1
Nicaragua	4	7.6	11.2	.....	.....	.....	..	.....	.....	4	7.6	11.2	...	.....	.....	...	.....	.....	.....	.....	.....
Norway	817	4,139.8	6,303.2	18	59.7	43.3	2	3.5	2.3	542	2,049.1	3,201.5	14	46.8	47.4	21	49.1	76.6	220	1,931.6	2,932.1
Panama	434	2,739.6	4,149.9	19	142.0	100.7	..	.....	.....	204	1,034.2	1,563.7	5	21.8	23.2	25	86.9	137.9	181	1,454.7	2,324.4
Peru	20	78.4	103.5	4	21.8	23.6	..	.....	.....	12	48.2	67.0	...	.....	.....	1	2.8	4.6	3	5.6	8.3
Philippines	24	86.1	115.1	7	17.2	14.7	..	.....	.....	16	66.6	96.8	...	.....	.....	1	2.3	3.6	.....	.....	.....
Poland	43	171.2	223.5	3	31.5	16.0	..	.....	.....	34	122.7	183.1	...	.....	.....	5	10.5	15.1	1	6.5	9.3
Portugal	88	381.5	526.4	21	127.3	122.8	..	.....	.....	60	215.6	341.6	...	.....	.....	...	.....	.....	7	38.6	62.0
Rumania	6	27.0	18.9	4	22.5	13.2	..	.....	.....	2	4.5	5.7	...	.....	.....	...	.....	.....	.....	.....	.....
Siam	2	2.9	4.2	.....	.....	.....	..	.....	.....	1	1.5	2.2	...	.....	.....	...	.....	.....	1	1.4	2.0
Spain	270	938.6	1,327.9	35	150.3	132.0	..	.....	.....	198	620.4	961.8	...	.....	.....	13	35.7	53.8	24	132.2	180.3
Sweden	532	1,756.7	2,668.3	32	180.6	182.0	..	.....	.....	412	1,048.8	1,689.7	8	30.3	35.5	41	158.9	241.9	39	338.1	519.2
Switzerland	10	41.5	65.0	.....	.....	.....	..	.....	.....	7	25.5	39.0	...	.....	.....	1	4.4	8.1	2	11.6	17.9
Turkey	76	250.7	304.9	26	107.4	92.7	..	.....	.....	44	120.0	177.6	...	.....	.....	1	1.2	1.6	5	22.1	33.0
Uruguay	11	69.7	104.5	2	10.2	11.7	..	.....	.....	7	38.9	59.2	...	.....	.....	...	.....	.....	2	20.6	33.6
U. S. S. R.	423	1,309.2	1,788.2	57	267.6	215.8	..	.....	.....	314	855.8	1,302.8	11	37.5	47.1	11	21.4	34.1	30	126.9	188.4
Venezuela	38	101.2	133.7	3	4.2	4.3	..	.....	.....	7	16.2	18.8	...	.....	.....	...	.....	.....	28	80.8	110.6
Yugoslavia	41	177.5	284.7	3	16.1	14.8	..	.....	.....	36	151.3	252.6	...	.....	.....	1	4.0	7.9	1	6.1	9.4
Unknown	5	16.1	19.1	1	5.6	5.7	..	.....	.....	4	10.5	13.4	...	.....	.....	...	.....	.....	.....	.....	.....
Total	**95**	**559.3**	**845.3**	**1**	**4.6**	**4.9**	..	.....	.....	**91**	**536.1**	**811.7**	...	.....	.....	**2**	**11.5**	**16.9**	**1**	**7.1**	**11.8**
Philippines	9	24.5	33.9	.....	.....	.....	..	.....	.....	9	24.5	33.9	...	.....	.....	...	.....	.....	.....	.....	.....
U. S. S. R.	86	534.8	811.4	1	4.6	4.9	..	.....	.....	82	511.6	777.8	...	.....	.....	2	11.5	16.9	1	7.1	11.8

[1] Includes United States Maritime Commission-Owned Vessels transferred to the following flags under lend-lease or other agreements and still remaining under these registries by subsequent arrangements. For purposes of this table they have been excluded from these registries.

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TABLE 3

Merchant Fleets of the World as of September 1, 1939, June 30, 1946, June 30, 1947, and December 31, 1948—Total Seagoing Steam and Motor Merchant Vessels of 1,000 Gross Tons and Over

(Excludes vessels on the Great Lakes and inland waterways and special types such as channel vessels, icebreakers, cable ships, etc., and merchant vessels owned by the military force)

Flag	Fleets as of 9/1/39	6/30/46	6/30/47	12/31/48	Percent 12/31/48 of 9/1/39
	(In millions of deadweight tons)				
World—Grand Total	**80.60**	**99.22**	**98.71**	**100.70**	**125**
United States	11.68	55.07	44.20	37.72	323
ECA Nations[1]	46.48	31.69	39.42	44.73	96
All Other	22.44	12.46	15.09	18.25	81
ECA Nations[1]	**46.48**	**31.69**	**39.42**	**44.73**	**96**
Belgium	0.49	0.27	0.46	0.51	104
Denmark	1.58	0.95	1.27	1.46	92
Eire	...	0.05	0.04	0.05	...
France	3.00	1.47	2.46	3.21	107
Greece	2.79	0.86	1.90	1.95	70
Iceland	...	0.01	0.01	0.03	...
Italy	3.91	0.69	1.90	2.85	73
Netherlands	3.42	1.99	2.93	3.46	101
Norway	6.93	4.20	5.22	6.30	91
Portugal	0.26	0.36	0.43	0.53	204
Sweden	2.03	2.20	2.39	2.67	132
Switzerland	...	0.05	0.05	0.07	...
Turkey	0.22	0.19	0.22	0.30	136
United Kingdom	21.85	18.40	20.14	21.34	98
All Other	**22.44**	**12.46**	**15.09**	**18.25**	**81**
Germany	5.18	1.16	0.56	0.21	4
Japan	7.14	1.43	1.18	1.65	23
Other	10.12	9.87	13.35	16.39	162

[1] Austria and Luxemburg have no merchant vessels measuring 1,000 tons gross and over.

TABLE 4

Merchant Fleets of the World as of September 1, 1939, June 30, 1946, June 30, 1947, and December 31, 1948—Combination (Passenger and Cargo) Vessels—1,000 Gross Tons and Over

(Excludes vessels on the Great Lakes and inland waterways and special types such as channel vessels, icebreakers, cable ships, etc., and merchant vessels owned by the military force.)

Flag	Fleets as of 9/1/39	6/30/46	6/30/47	12/31/48	Percent 12/31/48 of 9/1/39
	(In millions of deadweight tons)				
World—Grand Total	**9.93**	**5.09**	**5.44**	**6.06**	**61**
United States	1.09	0.62	0.83	0.62	57
ECA Nations[1]	5.62	3.15	3.32	4.075	73
All Other	3.22	1.32	1.29	1.365	42
ECA Nations[1]	**5.62**	**3.15**	**3.32**	**4.075**	**73**
Belgium	0.06	0.03	0.03	0.07	117
Denmark	0.16	0.07	0.09	0.08	50
Eire	...	...	[2]	...	...
France	0.74	0.28	0.31	0.37	50
Greece	0.04	0.01	0.02	0.03	75
Iceland	...	0.01	[3]	0.005	...
Italy	0.74	0.09	0.11	0.24	32
Netherlands	0.81	0.41	0.46	0.57	70
Norway	0.09	0.04	0.04	0.04	44
Portugal	0.07	0.08	0.09	0.12	167
Sweden	0.11	0.16	0.18	0.18	164
Switzerland	...	...	...	...	...
Turkey	0.06	0.05	0.06	0.09	150
United Kingdom	2.74	1.92	1.93	2.28	83
All Other	**3.22**	**1.32**	**1.29**	**1.365**	**42**
Germany	1.01	0.14	0.06	0.02	2
Japan	0.94	0.25	0.23	0.10	11
Other	1.27	0.93	1.00	1.245	98

[1] Austria, Luxemburg and Switzerland have no seagoing combination vessels measuring 1,000 tons and over.
[2] 1,700 tons dwt.
[3] 3,700 tons dwt.

clined to 50.7 million dwt. from 55.4 million dwt. prewar. In spite of this reduction, the U. S. flag privately owned fleet of cargo and combination vessels has increased from about 5.2 million dwt. to about 6.6 million dwt. The dry cargo and combination fleets of the Marshall Plan Countries have declined 1.9 million dwt. since prewar to a January, 1949 level of 30.8 million dwt., but certain Marshall Plan Countries, that is, the Netherlands, Sweden, France, Switzerland, Turkey, and Iceland have all shown increases. The dry cargo and combination fleets of most other countries outside of the European continent and with the exception of Germany and Japan were at the beginning of this year well ahead of their prewar position.

TABLE 5

Merchant Fleets of the World as of September 1, 1939, June 30, 1946, June 30, 1947, and December 31, 1948—Dry Cargo Freighter Vessels 1,000 Gross Tons and Over

(Excludes vessels on the Great Lakes and inland waterways and special types such as channel vessels, icebreakers, cable ships, etc., and merchant vessels owned by the military force.)

Flag	Fleets as of 9/1/39	6/30/46	6/30/47	12/31/48	Percent 12/31/48 of 9/1/39
	(In millions of deadweight tons)				
World—Grand Total	**53.76**	**70.90**	**70.14**	**71.67**	**133**
United States	6.33	41.19	31.96	29.66	469
ECA Nations[1]	31.06	20.69	26.99	29.225	94
All Other	16.37	9.02	11.19	12.785	78
ECA Nations[1]	**31.06**	**20.69**	**26.99**	**29.225**	**94**
Belgium	0.33	0.18	0.36	0.39	118
Denmark	1.25	0.74	1.04	1.18	94
Eire	...	0.05	0.04	0.05	...
France	1.80	0.89	1.77	2.12	118
Greece	2.70	0.82	1.84	1.75	65
Iceland	...	[2]	0.01	0.025	...
Italy	2.59	0.45	1.41	1.85	71
Netherlands	1.87	1.09	1.90	2.22	119
Norway	3.71	2.02	2.67	3.33	90
Portugal	0.18	0.25	0.29	0.35	194
Sweden	1.66	1.51	1.72	1.97	119
Switzerland	...	0.05	0.04	0.05	...
Turkey	0.15	0.13	0.15	0.18	120
United Kingdom	14.82	12.51	13.75	13.76	93
All Other	**16.37**	**9.02**	**11.19**	**12.785**	**78**
Germany	3.77	0.91	0.45	0.18	5
Japan	5.58	1.10	0.88	1.28	23
Other	7.02	7.01	9.86	11.325	161

[1] Austria and Luxemburg have no seagoing merchant vessels measuring 1,000 tons or over.
[2] 2,100 tons dwt.

TABLE 6

Merchant Fleets of the World as of September 1, 1939, June 30, 1946, June 30, 1947, and December 31, 1948—Tankers—1,000 Gross Tons and Over

(Excludes vessels on the Great Lakes and inland waterways and special types such as channel vessels, icebreakers, cable ships, etc., and merchant vessels owned by the military force.)

Flag	Fleets as of 9/1/39	6/30/46	6/30/47	12/31/48	Percent 12/31/48 of 9/1/39
	(In millions of deadweight tons)				
World—Grand Total	**16.91**	**23.23**	**23.13**	**22.97**	**136**
United States	4.26	13.26	11.41	7.44	175
ECA Nations[1]	9.80	7.85	9.11	11.43	117
All Other	2.85	2.12	2.61	4.10	144
ECA Nations[1]	**9.80**	**7.85**	**9.11**	**11.43**	**117**
Belgium	0.10	0.06	0.07	0.05	50
Denmark	0.17	0.14	0.14	0.20	118
Eire	...	...	...	...	...
France	0.46	0.30	0.38	0.72	157
Greece	0.05	0.03	0.04	0.17	...
Iceland	...	...	...	...	...
Italy	0.58	0.15	0.38	0.76	131
Netherlands	0.74	0.49	0.57	0.67	91
Norway	3.13	2.14	2.51	2.93	94
Portugal	0.01	0.03	0.05	0.06	600
Sweden	0.26	0.53	0.49	0.52	200
Switzerland	...	...	0.01	0.02	...
Turkey	0.01	0.01	0.01	0.03	300
United Kingdom	4.29	3.97	4.46	5.30	124
All Other	**2.85**	**2.12**	**2.61**	**4.10**	**143**
Germany	0.40	0.11	0.05	0.01	3
Japan	0.62	0.08	0.07	0.27	44
Other	1.83	1.93	2.49	3.82	209

[1] Austria, Eire and Luxemburg have no seagoing tankers measuring 1,000 gross tons and over.

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WORLD PASSENGER VESSEL FLEET*

A COMPARISON OF SIZE—SEPTEMBER, 1939, and JANUARY, 1949

(Including Merchant Type Seagoing Vessels of 1,000 Gross Tons and Over Only)

Country	1939	1949
WORLD TOTAL	9,713.7	5,464.6
U. S. Private	1,011.7(a)	489.6(b)
MARSHALL PLAN COUNTRIES	6,085.6	3,816.4
Belgium	86.8	36.6
Denmark	37.7	27.9
Eire	.....	.....
France	996.3	483.7
Greece	30.3	24.1
Iceland	.....	1.3
Italy	887.3	265.4
Netherlands	561.9	346.7
Norway	101.3	45.3
Portugal	68.1	98.0
Sweden	68.1	67.9
Switzerland	.....	.....
Turkey	53.1	85.6
United Kingdom	3,194.7	2,333.9
Canada	156.6	71.6
Panama	4.7	113.8
Spain	114.4	102.2
U. S. S. R.	85.5	198.4
Japan	733.6	163.4
Germany	812.3	13.8
Others	709.3	495.4

* Includes vessels with capacity for approximately 100 or more passengers only.
NOTE: Excludes merchant type vessels owned by military services.
(a) Includes 3 Panama Railroad vessels of 30,063 gross tons.
(b) Includes 3 Panama Railroad vessels totaling 30,000 gross tons and 8 government owned passenger vessels bareboated to private operators totaling 151,400 gross tons. Excludes austerity type passenger type vessels temporarily engaged in passenger service.
SOURCE: U. S. Maritime Commission Files—National Federation of American Shipping.

(B) Passenger Fleet

Part of the decline between 1939 and 1949 of the world's fleet of non-tanker tonnage can be attributed to the reduction in the size of the world's passenger fleet from 9.7 million gross tons to only 5.5 million gross tons or a reduction of 44% from prewar.[2]

In connection with this type of vessel, the United States has fared proportionately worse than any other significant maritime power with the exception of Germany, Japan, and Italy. From a prewar gross tonnage of over one million tons, we have receded 51.6% to less than 500,000 gross tons today, even when we included several government owned standard type passenger vessels currently under bareboat charter to private operators. The passenger fleet under U. K. flag has declined by about 850,000 gross tons but by less than 27% from its prewar level; the passenger fleet of France has declined slightly over half a million gross tons or 51% from prewar, while proportionately smaller decreases from the prewar level have been recorded by most other European countries. The combined Marshall Plan fleet has suffered a reduction of 37% from prewar tonnage in contrast with the worldwide decrease of 44%. Among the other countries of the world, only Panama and Russia have shown significant increases in the passenger segment of the merchant marine.

(C) Tanker Fleet

At the beginning of 1949, the tanker fleets of the world had already surpassed prewar tonnage by about one-third or some 5.8 million dwt. No major maritime power, with the exception of Germany, Japan, and Italy, was significantly below its prewar tanker tonnage, while most countries were well above the 1939 level. The U. S. flag tanker fleet was about 3 million tons (about 70%) over prewar, and the U. K. and Panamanian tanker fleets each are between one and two million dwt. over their 1939 level. The Marshall Plan Countries, as a group, are 1.6 million dwt. (over 16%) above the 1939 level.

[2] In this category, we are including vessels with a capacity for approximately 100 or more passengers. Vessels with smaller passenger capacity have been included as combination type.

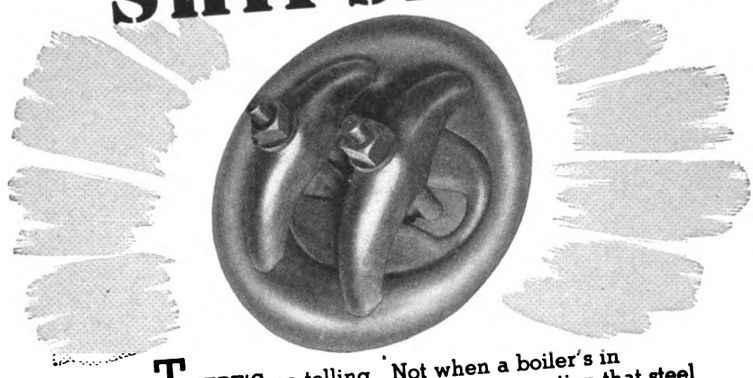
VESSEL CONSTRUCTION JANUARY, 1949

At the beginning of 1949, there were, overall, 11.7 million dwt. under construction or on order. Of this total, 6.6 million dwt. or 56% was tanker tonnage, the remainder being dry cargo and combination types.

Over 1.3 million dwt. or 20% of the total tanker tonnage under construction or on order in the world is potentially for U. S. flag operation. The U. K. is scheduled to add almost 1.5 million dwt. to its tanker fleet from new construction, and Norway has over 2 million dwt. building or on order. As a group, the Marshall Plan Countries construction program calls for an addition of 4.1 million dwt. or 62% of the anticipated world increase in tanker tonnage.

The current construction program for dry cargo and combination vessels calls for an addition of 5.1 million dwt. Less than 2% of this (96,000 dwt.) is scheduled for operation under the U. S. flag in contrast with 37% or 1.9 million dwt., which is due to operate under U. K. flag. As a group, the Marshall Plan Countries Programs call for construction of over 4.1 million dwt. of dry cargo and combination vessels or 80% of the world's total program. The remaining million dwt. of these types of vessels is widely divided for operation under the flags of non European countries.

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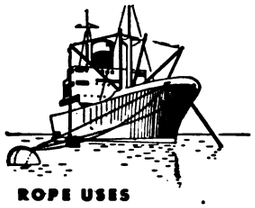
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AMERICAN OWNED FLEETS

as of July 1, 1949

Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
Agwilines, Inc.									
Agwidawn	C2	6125		12		Moore DD	303	Tu	6,600
Agwiqueen	"	6161		"		"	274	Tu	6,600
Alaska SS Co.									
Alaska	Steam	4514	220 Meas-tons	334	Alaska	Todd	36	..	.....
Aleutian	"	6361	250 " "	478	"	Wm. Cramp	335	..	.....
Baranof	"	4990	165 " "	333	"	N. Y. Shipbildg	197	..	.....
Denali	"	4302	235 " "	358	"	Newport News	319	..	.....
Victoria	"	3656	200 " "	None	"	W. Denny	148	..	.....
Chief Washakie	"	7180	None	None	"	Oregon	613	R	2,500
Terminal Knot	Motorship	3812	196	None	"	Kaiser	79	..	.....
Alcoa Steamship Co., Inc.									
Alcoa Cavalier	VC2-S1-AP7	8,481	13,827	95	Pass Cargo	Oregon	1268	Tu	9,350
Alcoa Clipper	"	8,481	13,827	" " "	"		1269	Tu	"
Alcoa Corsair	VC2-S1-AP7	8,481	"	" " "	"		1137	Tu	"
Alcoa Partner	C1-B	6,711.2	None	12	Freighters	Consolidated	233	Tu	4,400
Alcoa Pegasus	"	6,711.2	"	"	"	"	237	Tu	4,400
Alcoa Pennant	"	6,679.51	12,100	"	"	"	158	Tu	4,400
Alcoa Pilgrim	"	6,711.2	None	"	"	"	234	Tu	4,400
Alcoa Pioneer	"	6,759.35	"	"	"	Beth. Cal.	5361	Tu	4,400
Alcoa Planter	"	6,711	"	"	"	Consolidated	232	Tu	4,400
Alcoa Pointer	"	6,711	"	"	"	"	236	Tu	4,400
Alcoa Puritan	"	6,711	"	"	"	"	235	Tu	4,400
Alcoa Ranger	C2-S-AJ1	8,182	"	"	"	No. Carolina	190	Tu	6,600
Alcoa Roamer	"	8,172	"	"	"	"	127	Tu	6,600
Alcoa Runner	"	8,258	"	8	"	"	113	Tu	6,600
Alcoa Polaris	C1-B	6,679.51	10,800	12	"	Consolidated	159	Tu	4,400
Alcoa Patriot	"	6,759	11,431	"	"	Beth. Cal.	5363	Tu	4,400
American Eastern Corp.									
M/V Gadsden	Converted C1-M-AV-1	3884	9830	3	Continental (foreign)	Walter Butler	31	D	1,700
S/S Queenston Heights	T-2 Tanker	10,448	.....	12	Intercoastal & Foreign	Kaiser Co.	14	TE	7,240
American Export Lines, Inc.									
Extavia	Freight	6533	None	....	Mediterranean & India	Bath	185	..	.....
Exanthia	"	6533	"	....	"	"	186	..	.....
Exiria	"	6533	"	....	Via Suez	"	187	..	.....
Exceller	"	6535	"	....	From North	"	184	..	.....
Exbrook	"	7047	29,872 cu. ft.	....	Atlantic	Bethlehem Sp.	4443	Tu	8,800
Exchester	"	7129	" "	....	U.S. Coast	"	4427	Tu	"
Executor	"	7129	" "	....	Ports	"	4428	"	"
Exford	"	7047	" "	....		"	4444	"	"
Exporter	"	7047	" "	....		"	4429	"	"
Exton	"	7607	None	....		Permanente Yd 1	V531	..	.....
Exmouth	"	7607	"	....		Oregon	1220	Tu	9,350
Examiner	"	"	"	....		Bethlehem, Mass.	1484	"	8,800
Excelsior	"	7618	"	....		Bethlehem Sp.	4394	"	"
Exchange	"	6736	"	....		" Mass.	1476	"	"
Exchequer	"	6683	"	....		" Sp.	4394	"	"
Exemplar	"	6736	"	....		" Mass.	1481	"	"
Exhibitor	"	6736	"	....		" Mass.	1482	"	"
Exminster	"	6685	"	....		" Sp.	4395	"	"
Explorer	"	6736	"	....		" Mass.	1475	"	"
Express	"	6770	"	....		" Sp.	4396	"	"
Excalibur	Pass. Frght.	9684	27,842 cu. ft.	124		" Fairf.	4420	Tu	"
Exochorda	"	"	"	"		" Sp.	4419	"	"
Exeter	"	"	"	"		" "	4422	"	"
Excambion	"	"	"	"		" "	4421	"	"
American Foreign SS Corp.									
American Robin	Liberty	....	....	....	Foreign	Todd-Houston	146	R	2,500
" Oriole	"	....	....	....	"	Bethlehem Fair.	2094	R	"
" Starling	"	....	....	....	"	" "	2404	R	"
" Eagle	"	....	....	....	"	New England	3063	R	2,500
American Hawaiian									
Hawaiian	Freighter	6264	....	....	Foreign	Wm. Cramp	447	..	.....
Minnesotan	"	6617	....	....	"	Maryland Steel	124	..	.....
American Mail Line, Ltd.									
SS American Mail	C3	7917	None	12	Oriental	Ingalls	427	Tu	9,350
SS Canada Mail	"	7970	"	"	"	Western Pipe	130	Tu	9,350
MV China Mail	C2	6606	28,150CF	"	"	Sun Shipbldg.	201	D	7,500
SS India Mail	"	7909	None	8	"	Western Pipe	93	Tu	9,350
MV Island Mail	C2	6622	28,150CF	12	"	Sun	200	D	7,500
SS Java Mail	C3	8027	None	"	"	Western Pipe	131	Tu	9,350
MV Ocean Mail	C2	6606	28,150CF	"	"	Sun	199	D	7,500
SS Oregon Mail	C3	7886	41,537CF	"	"	Ingalls	442	Tu	9,350
SS Washington Mail	"	7943	41,537CF	"	"	"	429	"	"
American Oil Company									
Pan-Amoco	Tanker	9927	....	....	Gulf Atlantic Coast Ports	Sun	155	..	.....
Pan-American	"	"	....	....		"	156	..	.....
American Pacific Steamship Company									
Ampac California	T2-SE-A1	10195	Nil	Nil	Time chart.	....	....	..	.....
Ampac Washington	"	10448	"	"	"	....	....	..	.....
American President Lines									
President Pierce	C-3	7,924.93	47,605	8	Transpacific	Western Pipe	137	Tu	9,350
" Grant	"	7,963.80	"	"	"	"	136	Tu	"
" Taft	"	7,962.63	"	"	"	"	135	Tu	9,350
" Madison	"	7,924.93	"	"	"	N. Y. Shipbldg.	138	Tu	9,350
" McKinley	"	7,924.93	"	"	"	Western Pipe	175	Tu	9,350
" Jefferson	"	"	"	"	"	"	176	Tu	9,350
" Van Buren	"	7,995.0	44,880	12	Round World	....	....	Tu	9,350
" Johnson	"	"	"	"	Atl. Straits	N. Y. Shipbldg.	6	Tu	9,350
" Harrison	"	"	"	"	"	....	....	Tu	9,350
" Harding	AP-3	7,606	None	4	Transpacific	....	....	Tu	9,350
" Tyler	"	"	"	"	Round World	N. Y. Shipbldg.	245	Tu	9,350
" Fillmore	"	7,607	"	"	"	....	....	Tu	9,350
" Buchanan	"	7,606	"	"	"	N. Y. Shipbldg.	247	Tu	9,350
" Polk	C-3-P	9,260.92	43,215	98	"	Newport News	386	Tu	9,350
" Monroe	"	9,255.86	"	"	"	" "	380	Tu	9,350
American Trading & Production Corp.									
American Trader	T-2 Tk Ves.	10,296	15,500 L/T	....	Worldwide	Sun S. B.	405	TE	7,240
Baltimore Trader	"	10,296	"	....	"	"	404	TE	7,240
Crown Trader	"	10,296	"	....	"	"	456	TE	7,240
The Atlantic Refining Co.									
SS Atlan. Coast	Tanker	8,529	None	None	Coastwise & Foreign	Sun S. B.	327	TE	6,040
SS Atl. Dealer	"	10,296	"	"	"	"	481	TE	7,240
SS Atl. Exporter	"	10,296	"	"	"	"	480	TE	7,240
SS Atl. Mariner	"	10,296	"	"	"	"	489	TE	7,240
SS Atl. Ranger	"	10,294	"	"	"	"	532	TE	7,240
SS Atl. Refiner	"	10,296	"	"	"	"	488	TE	7,240
SS Atl. States	"	8,535	"	"	"	"	230	TE	.....
SS Atl. Trader	"	10,296	"	"	"	"	475	TE	7,240
SS E. H. Blum	"	11,638	"	"	"	"	211	TE	6,030
SS E. J. Henry	"	11,615	"	"	"	"	181	TE	6,030
SS J. W. Van Dyke	"	11,651	"	"	"	"	160	..	.....
SS Robert C. Tuttle	"	11,615	"	"	"	"	194	TE	6,030
SS W. C. Yeager	"	11,615	"	"	"	"	229	TE	6,030
MS Franklin	"	601	"	"	Inland Waters	"	150	..	.....
MS Brunswick	"	8,890	"	"	Foreign	....	....	..	.....
MS Permian	"	8,890	"	"	Foreign	....	....	..	.....
Bernuth, Lembcke Co., Inc.									
SS O. M. Bernuth	Tanker	7,972	....	....	Coast-For.	Sun S. B.	170	Tu	3,960
SS Albert G. Brown	"	7,218			"	Delta	82	R	2,500
SS Eliza J. Nicholson	"	7,218			"	Delta	83	R	2,500
SS Fullerton Hills	"	10,441			"	Marinship	83	TE	7,240
SS Adellen	"	9,807			"	....	....	..	.....
SS Tydol Bayonne	"	10,297			"	Sun	396	TE	7,240
Blidberg Rothchild Co., Inc.									
U. S. O.	Liberty	7,176			Tramp	Bethlehem F.	2259	R	2,500
A. H. Bull & Co. (Agts.)									
Beatrice	Frt.-Pass.	8,189	23,000 cu. ft.	12		North Carolina	142	TU	6,600
Elizabeth	"	8,258	"	"		"	106	"	"
Frances	"	"	"	"		"	116	"	"
Kathryn	"	8,189	"	"		"	146	"	"
Suzanne	"	"	"	"		"	144	"	"
Edith	Freight	6,643				Delta	186	R	2,500
Evelyn	"	"				"	181	"	"
Mae	"	"				"	182	"	"
Arlyn	Liberty	7,191				Beth. Fairfield	2048	"	"
Carolyn	"	"				"	2028	"	"
Cornelia	Freight	3,129	121,788 cu. ft.			Maryland Steel	155	"	"
Dorothy	"	4,647				Beth. Ltd.	173	R	"
Emilia	"	4,719				Beth. Ltd.	169	"	"
Helen	"	3,128	121,788 cu. ft.			Maryland Steel	156	"	"
Hilton	"	4,741	165,000 cu. ft.			Standard S. B.	3	"	"
Jean	"	4,902				Bethlehem Ltd.	170	"	"
Angelina	"	7,176				Bethlehem F.	2236	"	"
Marina	"	7,200				"	2076	"	"
Monroe	"	5,533				Newburgh Ship.	9	TU	3,000
Rosario	"	7,191				Bethlehem F.	2057	R	2,500
SS Ines	Frt.-Pass.	6,103	....	12		Consolidated	1363	TU	6,600
MV Ann Marie	Freight	3,805	....	....	....	Walter Butler	48	D	1,700
SS Puerto Rico	Pass.-Frt.	7,114	61,282 cu. ft.	199		Bethlehem	1432	TU	6,000
Catalina Island SS Line									
SS Catalina	Steam-Steel	1,766	1956		Pkg.-Pass.	Los Angeles S.B.	42	..	.....
SS Avalon	"	1,985	1625		"	Globe	42	..	.....
and tow boats					Catalina Island				
W. R. Chamberlin									
C-Coaster	LSM	625	....	....	Pacific Coast Lumber	....	....	..	.....
Cities Service Oil Co.									
SS Abiqua	T2	10,172			Ocean	Alabama	264	TE	7,240
SS Lone Jack	T2	10,296			"	Sun	450	TE	7,240
SS French Creek	"	"			"	"	454	TE	7,240
SS Coun. Grove	"	10,173			"	Alabama	340	TE	"
SS Chiwawa	T3	10,279			"	Beth. Sp.	4378	TU	7,700
SS Paoli	T2	10,296			"	Sun	401	TE	7,240
SS Cantigny	T2	"			"	Sun	461	TE	7,240
SS Logan's Fort	T2	"			"	Sun	467	TE	7,240
SS Archer's Hope	"	10,172			"	Alabama	346	TE	7,240
SS Royal Oak	"	10,296			"	Sun	468	TE	7,240
SS Winter Hill	"	"			"	Sun	477	TE	7,240
SS Gov. Camp	"	10,448			"	Kaiser	141	TE	7,240
SS Ft. Hoskins	"	10,448			"	"	149	TE	7,240
SS Salem Maritime	"	"			"	"	131	TE	7,240
SS Bents Fort	"	"			"	Kaiser	153	TE	7,240
SS Bradford Island	"	"			"	"	133	TE	7,240
SS Bull Run	"	10,195			"	Sun	287	TE	7,250
SS Petrolite	"	10,296			"	"	390	TE	7,240
Coastwise Bulk Carriers, Inc.									
SS Horace See	Lbr. Tank.					Calif. S. B.	T-11	R	2,500
SS Harvey W. Wiley	"					"	T-15	R	2,500
Continental Oil Co.									
Conoco Lake Charles	St. Tanker	9,900			Coastwise				
Conoco Denver	"	10,422			"				
Dichmann Wright & Pugh, Inc.									
W. H. Kendrick	EC 2	7,176			Var. Trades	Delta S. B.	154	R	2,500
Eastern SS Lines, Inc.									
Yarmouth	Pass.-Car	5,002.78		600	Near by For.	Wm. Cramp	518	..	.....
Evangeline	"	"		"	"	"	524	..	.....
Acadia	Undergoing survey for reconversion to passenger service					Newport News	351	..	.....
Eastport SS Corp.									
Eastport	Cargo	2,991	....	....	Tramp	Flensburger	434	..	.....
Empire Roding	"	2,957	....	....	Tramp	....	....	..	.....
Westport	Lib. Tanker	7,218	....	....	Tramp	....	....	..	.....
Edison Tanker Co., Inc.									
Edison Skipper	Z-ET1-S-C3	7,243		....	Worldwide	California S. B.	T-22	R	2,500
Edison Steamship Corp.									
Edison Marner	EC2-SC1	7,176	....	12	Tramp	New England S.B.	3105	R	2,500
Fall River Nav. Co.									
SS Yankee Dawn	Single Screw Fighter	3,117	....	....	Coastwise	Flensburger	426	..	.....
Farrell Lines									
Afr. Crescent	C3	7,972	21,478	12	S. & E. Afr.	Federal S. B.	517	Tu	9,350
" Dawn	C2	6,508	27,434	12	"	Federal S. B.	237	Tu	6,600

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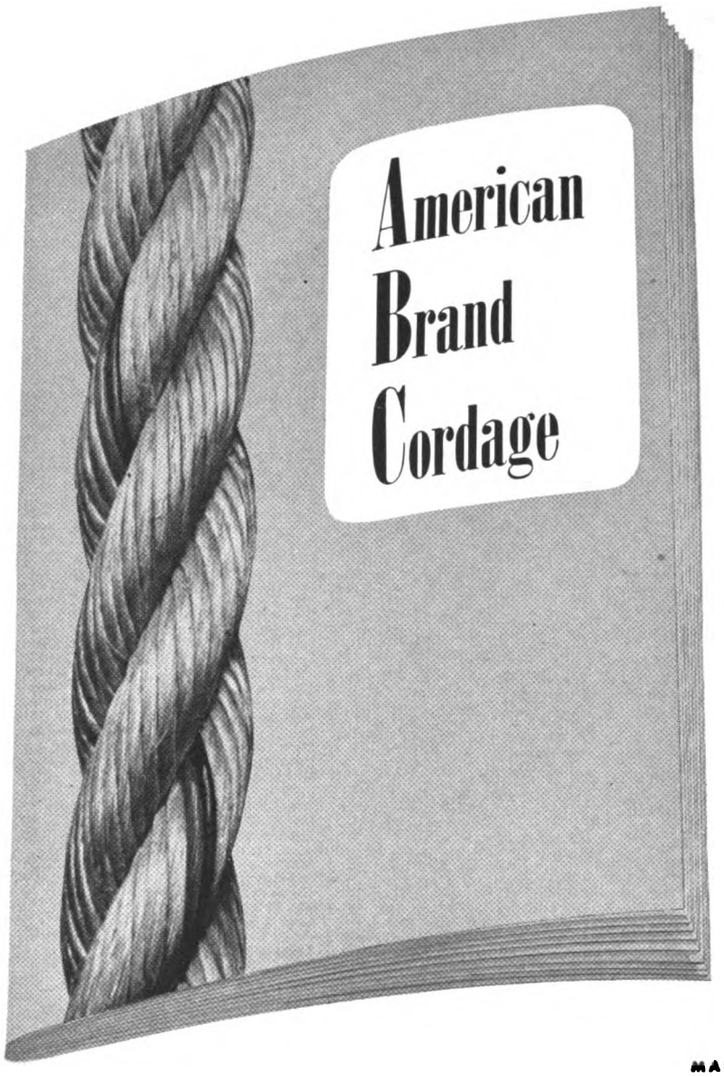
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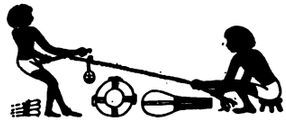


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AMERICAN OWNED FLEETS *(Continued)*

Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
" Glade	C2	6,116	3,588	"	W. Africa	Moore DD	253	Tu	6,600
" Glen	C2	6,111	3,588	"	W. Africa	"	288	Tu	6,600
" Grove	"	6,114	3,588	"	"	"	252	Tu	6,600
" Lightning	C3	7,974	21,478	"	S. & E. Afr.	Federal S. B.	519	Tu	9,350
" Moon	"	"	21,478	"	"	"	518	Tu	9,350
" Planet	"	7,971	"	"	"	"	515	Tu	9,350
" Rainbow	"	"	"	"	"	"	516	Tu	9,350
" Star	"	"	"	"	"	"	514	Tu	"
" Sun	C2	6,508	27,434	"	"	"	238	Tu	6,600
MV Afr. Guide	(FS)	573.25	None	"	W. African Coastal	Higgins Ind.	54	..	.....
SS Afr. Patriot	C2	6,214.41	3,588	"	West Africa	Moore DD	269	Tu	6,600
SS Afr. Pilgrim	"	8,233.13	"	"	West Africa	"	260	Tu	6,600
SS Afr. Pilot	"	6,214.41	"	"	West Africa	"	268	..	.....
Federal Motorship Corp.									
Mosoil	St. Tanker	7,641	None			Baltimore	111	..	.....
Mostank	St. Tanker	7,218	"			....	....	..	.....
Flanigan, Loveland, Inc.									
John Flanigan	T2 Tanker	10,448			Worldwide	Kaiser S. I.	150	TE	7,240
Samuel C. Loveland	T2 "	10,195			"	Sun S. B.	284	TE	7,240
Elizabeth A. Glanigan	T2 "	10,172			"	Alabama DD	254	TE	7,240
Foreign Tankship Corp.									
California Standard	MS	11,179			Persian Gulf	Krupp	494	..	3,600
Bahrein	SS	7,095			Worldwide	Union Construc.	14	..	3,000
Macoa	SS	8,640			"	Union Iron	124	D	3,300
Palmar	SS	6,984			"	Bethlehem	5305	..	3,000
Grace Line, Inc.									
Santa Rosa	Pass-Frt.	9,237	63,601	211	Caribbean	Federal	121	Tu	13,200
Santa Paula	"	"	"	"	from N. Y.	"	122	Tu	"
Santa Clara	Modified C2	8,610	3,505	52	"	"	566	Tu	6,600
Santa Monica	Pass-Frt.	"	3,436	"	"	"	565	Tu	6,600
Santa Sofia	"	"	3,452	"	"	"	567	Tu	6,600
Santa Barbara	"	8,327	93,674	"	W. Coast-S.	No. Carolina	238	Tu	6,600
Santa Cecilia	"	"	"	"	A. from N.Y.	"	239	Tu	6,600
Santa Isabel	"	"	"	"	"	"	243	Tu	6,600
Santa Luisa	"	"	"	"	"	"	242	Tu	"
Santa Margarita	"	"	"	"	"	"	240	Tu	"
Santa Maria	"	"	"	"	"	"	241	Tu	"
Santa Ana	C2	8,095	92,800	None	Caribbean	Newport News	375	Tu	6,600
Santa Catalina	"	8,297	103,400	12	from N. Y.	No. Carolina	121	Tu	6,600
Santa Eliana	"	8,258	None	"	"	"	114	Tu	"
Santa Ines	"	8,297	103,400	"	"	"	125	Tu	"
Santa Teresa	"	8,095	92,800	None	"	Newport News	376	Tu	"
Santa Elisa	"	8,297	103,400	12	W. Coast- S.	No Carolina	123	Tu	"
Santa Olivia	"	"	"	"	A. from N. Y.	"	104	Tu	"
Santa Rita	"	"	"	"	"	"	117	Tu	"
Santa Adela	"	6,507	27,434	"	W Coast-S.	Federal	234	Tu	"
Santa Flavia	"	"	"	"	A. from Pac-	"	239	Tu	"
Santa Juana	"	"	"	"	fic Coast Ports	"	233	Tu	"
Santa Leonor	"	8,258	None	"	"	No. Carolina	118	Tu	"
Gulf Oil Corporation									
Gulfpride	Tanker	12,510			U. S. Gulf	Federal	80	D	4,000
Gulfbird	"	10,217			Caribbean	Furness	122	D	3,260
Gulfhawk	"	"			and East	"	123	D	3,260
Gulfwing	"	"			Coast of	"	124	D	3,260
Gulfcrest	"	8,916			U. S.	American	304	D	3,200
Gulf of Venezuela	"	6,910			"	New York	173	D	2,500
Gulf Maracaibo	"	9,306			"	Sun S. B.	233	Tu	5,500
Gulf Caribbean	"	9,299			"	"	240	Tu	5,500
Gulfport	"	8,080			"	Bethlehem Sp	4372	Tu	3,960
Gulfcoast	"	7,140			"	"	4304	Tu	3,500
Gulftide	"	"			"	"	4305	Tu	3,500
Gulfwave	"	"			"	"	4324	Tu	3,500
Gulfdisc	"	"			"	"	4325	Tu	3,500
Pueblo	"	4,396			"	Baltimore D.D.	122	Tu	1,800
Gulfwax	"	8,862			"	Sun S. B.	41	R	3,870
Gulf of Mexico	"	7,807			"	New York	173	R	2,970
Gulfpoint	"	6,972			"	Bethlehem	....	R	2,970
Gulfstar	"	6,969			"	Sun S. B.	29	R	2,880
Gulfgem	"	6,917			"	Sun S. B.	28	R	2,880
Gulfking	"	6,560			"	Union S. B.	14	R	2,880
Transferred to Belgian Gulf Oil									
Belgium Gulf	Tanker	8,184			"	Bergerhouts Masch.	115	D	3,500
Good Gulf	"	7,788			"	A. G. Howaldtswerke	758	D	3,000
Spidoleine	"	6,014			"	Ateliers et Chant.	140	D	2,800
Gulfdawn	"	10,195			Persian Gulf	Sun S. B.	255	TE	7,240
Gulfflight	"	"			"	"	285	"	"
Gulfstream	"	"			"	"	258	"	"
Gulftrade	"	"			"	"	297	"	"
Gulfmoon	"	"			"	"	535	"	"
Gulfhorn	"	"			"	"	470	"	"
Gulf Glow	Tanker	10,448			U. S. Gulf	Kaiser	47	Tu	6,600
Gulfwell	"	10,448			Caribbean and	"	89	Tu	6,600
Gulfmeadows	"	10,195			East Coast	Sun S. B.	319	"	"
Gulf Victor	"	10,195			of U. S. and	"	298	"	"
Gulf Peak	"	10,172			Persian	Alabama	331	"	"
Gulf Pass	"	10,172			Gulf	"	345	"	"
Gulf Swamp	"	10,172			"	"	280	"	"
Gulfkey	"	10,172			"	"	334	"	"
Gulfray	"	10,296			And Persian	Sun	430	TE	7 240
Gulfshore	"	"			Gulf Trade	"	434	"	"
Gulfhaven	"	"			"	"	428	"	"
Gulfscout	"	"			And Persian	"	336	TE	"
Gulfmills	"	"			Gulf	"	437	"	"
Gulfbrand	"	"			And Persian	"	421	"	"
Gulfoil	"	10,340			Gulf	Bethlehem Sp.	4381	TU	7,700
Gulfland	"	10,606				Sun S. B.	438	TE	7,240
Gulflube	"	8,197				Bethlehem Sp.	4460	TU	5,500
Gulf & South American Steamship Co., Inc.									
Gulf Merchant	C-2 Cargo	8,250	8,159	12	U. S. Gulf	No. Carolina	149	TU	6,600
Gulf Banker	"	"	8,258	"	Ports to West	"	105	TU	"
Gulf Shipper	"	"	8,189	"	Coast South	"	138	TU	"
Gulf Farmer	"	"	8,156	"	American Ports, Columbia, Equador, Peru, Bolivia, Chile	"	91	TU	"
Hillcone SS Company									
Str. Sangamon	Tanker	11,323			Foreign	Federal S. B.	153	Tu	15,200
Str. Cornell	"	10,180			"	Bethlehem Sp	4375	Tu	7,700
Str. Salinas	"	8,246			Coastwise	Newport News	251	..	.....
Str. Trinity	"	8,267			"	"	255	..	.....

Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
Independent Tankships, Inc.									
Birch Coulie	T-2-SE-A1	10,172	....	....	Worldwide	Alabama DD	246	TE	7,240
Fort Totterman	"	"	....	....	"	"	290	"	"
Pine Ridge	"	"	....	....	"	"	255	"	"
Powder River	"	"	....	....	"	"	256	"	"
Quemado Lake	"	"	....	....	"	"	257	"	"
Spirit of Liberty	"	"	....	....	"	North America	....	..	.....
International Freighting Corporation, Inc. As Agents for Cuba Distilling Company									
SS Carrabulle	Tanker	7,227.20	No	No	Molasses-W.	Calif. S. B.	T14	R	2,500
SS Catahoula	"	"	"	"	Indies Ports	"	T12	"	"
Interstate Nav. Co.									
Elizabeth-Ann	Pass.-Frt.	77		99	Pt. Judith, R. I. Block Is , R. I.	No Information			
Rocket	Pass.	39		120	"				
Whitecap	"	34		75	Cape Cod Canal				
Isthmian S. S. Company									
Anniston City	Shelter	5,686	None	4	Worldwide	Chickasaw	10	TU	3,100
Atlanta City	"	5,686	"	"	"	"	11	TU	3,100
Montgomery City	"	"	"	"	"	"	5	"	"
Steel Inventor	"	"	"	"	"	Federal S. B.	41	"	"
Steel Mariner	"	"	"	"	"	"	37	"	"
Steel Ranger	"	"	"	"	"	"	42	"	"
Steel Admiral	C-3 Shelter	8,071	55,000	12	"	Western Pipe	121	TU	9,350
Steel Advocate	"	8,001	5,000	"	"	Ingalls	409	"	"
Steel Age	"	7,852	None	"	"	Western Pipe	92	"	"
Steel Apprentice	"	8,062	55,000	"	"	"	128	"	"
Steel Architect	"	8,004	5,000	"	"	"	132	"	"
Steel Artisan	"	7,984	55,000	"	"	Ingalls	434	"	"
Steel Chemist	"	7,957	None	"	"	"	333	"	"
Steel Designer	"	7,927	55,000	"	"	"	432	"	"
Steel Director	"	8,023	5,000	"	"	"	401	"	"
Steel Executive	"	8,019	5,000	"	"	"	443	"	"
Steel Fabricator	"	8,162	5,000	"	"	Western Pipe	94	"	"
Steel Flyer	"	8,018	5,000	"	"	Ingalls	332	"	"
Steel King	"	8,147	5,000	"	"	"	416	"	"
Steel Maker	"	7,838	5,000	"	"	Western Pipe	133	"	"
Steel Navigator	"	8,013	5,000	"	"	Ingalls	445	"	"
Steel Recorder	"	8,095	5,000	"	"	"	335	"	"
Steel Rover	"	8,090	55,000	"	"	"	412	"	"
Steel Scientist	"	8,027	5,000	"	"	"	407	"	"
Steel Seafarer	"	7,927	55,000	"	"	"	436	"	"
Steel Surveyor	"	8,040	5,000	"	"	Western Pipe	95	"	"
Steel Traveler	"	8,022	5,000	"	"	Ingalls	423	"	"
Steel Vendor	"	7,925	None	"	"	Western Pipe	127	"	"
Steel Voyager	"	8,129	55,000	"	"	Ingalls	420	"	"
Steel Worker	"	7,849	55,000	"	"	"	430	"	"
Keystone Shipping Co. Keystone Tankship Corp.									
Atlan. Traveler	T-2 Tanker	10,195				Sun S. B.	261	TE	7,240
Bennington	"	10,378				"	269	"	"
Bunker Hill	"	10,410				"	242	"	"
Catawba Ford	"	10,317				"	411	"	"
Cherry Valley	"	10,390				"	249	"	"
Monmouth	"	10,434				"	248	"	"
Ticonderoga	"	10,172				"	268	"	"
Chas. Kurz & Co., Inc.									
Andrew A. Humphreys	Liberty	7,306				Delta S. B.	77	R	2,500
Gaines Mill	T-2 Tanker	10,195				Sun S. B.	262	TE	7,240
Mill Spring	"	10,408				"	307	"	7,240
Oscar S. Straus	Liberty	7,306				Delta S. B.	79	R	2,500
Perote	T-2 Tanker	10,195				Sun S. B.	286	TE-	7,240
Tuilahoma	"	10,296				Sun S. B.	400	"	7,240
Luckenbach SS Co.									
Andrea F. Luckenbach	C2-S-AJ1	8,170.86		12	Intercoastal	No. Carolina	189	TU	6,600
Edgar F. Luckenbach	"	"		"	Foreign	"	130	"	"
Edward Luckenbach	C3-S-A2	7,870.16		"	"	.....	....	..	.....
Florence Luckenbach	C2-S-AJ1	8,166		"	"	No. Carolina	103	Tu	6,600
Jacob Luckenbach	C3-S-A2	7,869.25		"	"	Ingalls	411	"	9,350
Julia Luckenbach	C2-S-AJ1	8,162.28		"	"	No. Carolina	143	"	6,600
Katrina Luckenbach	Owners	7,942.18		....	"	Fore River	267	..	.....
K. I. Luckenbach	"	7,896		....	"	Fore River	264	..	.....
Mary Luckenbach	C2-S-AJ1	8,162.20		12	"	No. Carolina	140	Tu	6,600
Mathew Luckenbach	C3-S-A2	7,870.44		"	"	Ingalls	403	"	9,350
Walter A. Luckenbach	Owners	8,077.49		2	"	Seattle	91	..	.....
F. J. Luckenbach	C3-S-42	8,266		12	"	Western Pipe	89	Tu	9,350
Horace Luckenbach	"	7,958		"	"	"	123	"	"
Robert Luckenbach	"	7,958		"	"	"	125	"	"
George Luckenbach	"	7,886		"	"	Ingalls	334	"	"
J. L. Luckenbach	"	7,886		"	"	"	336	"	"
Sea Bass Luckenbach	"	7,949		"	"	Western Pipe	80	"	"
Sea Cat Luckenbach	"	7,942		"	"	"	90	"	"
Sea Devil Luckenbach	"	8,008		"	"	"	91	"	"
Adabelle Lykes	C1-B	6,711		12	Worldwide	Pusey & Jones	1076	TU	4,400
Aimee Lykes	C2	6,119		"	"	Moore DD	265	"	6,600
Almeria Lykes	C3	7,855		"	"	Federal	510	"	9,350
Barbara Lykes	C2	6,108		"	"	Moore	272	"	6,600
Charles Lykes	C2	8,179		"	"	No. Carolina	225	"	6,600
Dick Lykes	C2	8,174		"	"	"	226	"	6,600
Doctor Lykes	C3	7,855		"	"	Federal	513	"	9,350
Dolly Truman Lykes	C2	6,103		9	"	Consol. Steel	1366	"	6,600
Elizabeth Lykes	C2	8,181		12	"	No. Carolina	210	"	6,600
Eugene Lykes	C2	8,191		"	"	"	217	"	6,600
Frank Lykes	C2	8,168		"	"	"	115	"	6,600
Fred Morris	C1-B	6,657		"	"	Consolidated	752	"	4,400
Frederick Lykes	C3	7,773		"	"	Federal	163	"	9,350
Genevieve Lykes	C2	8,189		"	"	No. Carolina	134	"	6,600
George Lykes	C1-B	6,711		"	"	Consolidated	359	"	4,400
Gibbes Lykes	C2	8,168		"	"	No. Carolina	107	"	6,600
Harry Culbreath	C2	8,183		"	"	"	212	"	6,600
Helen Lykes	C2	6,108		9	"	Moore	261	"	6,600

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AMERICAN OWNED FLEETS *(Continued)*

Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
Howell Lykes	C3	7,821		12	"	Federal	166	"	9,350
James Lykes	C1-B	6,761		"	"	Bethlehem	4344	"	4,400
James McKay	C2	8,181		"	"	No. Carolina	215	"	6,600
Jean Lykes	C1-B	6,711		9	"	Consolidated	229	"	4,400
Jesse Lykes	C2	8,178		12	"	No. Carolina	214	"	6,600
John Lykes	C1-B	6,829		"	"	Federal	176	"	4,400
Joseph Lykes	C1-B	6,829		5	"	Federal	172	"	4,400
Kendall Fish	C2	8,230		12	"	No. Carolina	227	"	6,600
Kenneth McKay	C2	8,178		"	"	No. Carolina	207	"	"
Letitia Lykes	"	6,115		"	"	Moore DD	283	"	"
Lipscomb Lykes	C3	7,855		"	"	Federal	511	"	9,350
Louise Lykes	C2	8,181		"	"	No. Carolina	209	"	6,600
Mallory Lykes	C2	6,214		9	"	Moore DD	250	"	"
Margaret Lykes	C2	6,108		9	"	"	270	"	"
Mason Lykes	C2	8,159		12	"	No. Carolina	129	"	"
Nancy Lykes	C1-B	6,711		"	"	Consolidated	228	"	4,400
Norman Lykes	C3	7,855		"	"	Federal Shipbldg.	512	"	9,350
Reuben Tipton	C2	8,181		"	"	No. Carolina	211	"	6,600
Ruth Lykes	C2	8,175		"	"	"	203	"	"
Solon Turman	C1-B	6,711		12	"	Consolidated	231	"	4,400
Stella Lykes	C2	8,180		"	"	No. Carolina	202	"	6,600
Sue Lykes	C2	8,179		"	"	No. Carolina	218	"	6,600
Sylvia Lykes	C2	6,108		"	"	Moore	302	"	6,600
Thompson Lykes	C1-B	6,763		"	"	Bethlehem Sp.	4346	"	4,400
Tillie Lykes	C3	7,855		"	"	Federal	509	"	9,350
Tyson Lykes	C2	8,191		"	"	No. Carolina	216	"	6,600
Velma Lykes	C2	8,181		"	"	No. Carolina	208	"	6,600
Virginia Lykes	C2	6,108		9	"	Moore DD	255	"	6,600
William Lykes	C2	8,186		12	"	No. Carolina	213	"	6,600
Zoella Lykes	C1-B	6,829		5	"	Federal	173	"	4,400
Marine Transport Lines, Inc., Agents									
Marine Courier	EC2-S-C1 Conv. to Bulk Carrier	6,625			Bulk Cargo	New England	3116	R	2,500
Marine Merchant	"	6,639			"	New England	3029	R	2,500
Marine Trader	EC2-S-AW1	6,643			"	Delta	162	R	2,500
Marine Transport	"	6,643			"	Delta	180	R	2,500
Ponca City	T2-SE-A1	10,448			Bulk Oil	Alabama DD	353	TE	7,240
Spirit of Liberty	"	10,172			"	Alabama DD	253	TE	6,600
Tagalam	Sing. Scr. M.T.	10,290			"	F. Schichau	1350	D	3,600
Matson Nav. Co.									
Lurline	Passenger	18,163	50,645	722	Hawaiian	Bethlehem	1447	TU	22,000
Hawaiian Banker	Cargo	7,578	41,390		N.W.-T.R.	Ingalls	431	"	9,350
Hawaiian Fisherman	"	7,894	Nil		L.A.-T.H.	"	424	"	"
Hawaiian Planter	"	7,896	41,390		N.W.-T.H.	"	435	"	"
Hawaiian Educator	"	7,897	.....		E. Coast-T.	"	428	"	"
Hawaiian Forester	"	7,240	.....		H. Hawaiian	St. Johns	65	R	2,500
Hawaiian Merchant	"	8,300	57,540		"	Ingalls	444	Tu	9,350
Hawaiian Builder	"	8,338	57,540		"	Western Pipe	134	Tu	9,350
Hawaiian Logger	"	7,176	.....		"	Delta	143	R	2,500
Hawaiian Lumberman	"	7,247	.....		"	Todd	148	R	2,500
Hawaiian Craftsman	"	7,885	41,390		"	Ingalls	433	Tu	9,350
Hawaiian Packer	"	8,396	57,540		"	"	331	"	"
Hawaiian Rancher	"	8,353	55,614		"	Western Pipe	126	"	"
Hawaiian Farmer	"	"	"		"	"	124	"	"
Hawaiian Retailer	"	7,940	.....		"	Ingalls	408	"	"
Hawaiian Citizen	"	7,901	Nil		"	Western Pipe	129	"	"
Hawaiian Refiner	"	8,405	56,330		"	"	122	"	"
Hawaiian Pilot	"	8,445	56,614		"	Ingalls	406	"	"
Hawaiian Wholesaler	"	8,413	56,330		"	"	422	"	"
Mississippi Shipping Co., Inc. (Delta Line)									
Del Aires	Steam	6,509	29,961 cu. ft.	12		Federal	186	Tu	6,600
Del Alba	"	8,258	None	"	East Coast	No. Carolina	95	"	6,600
Del Valle	"	"	"	"	of So. Amer-	"	112	"	"
Del Mundo	"	"	"	"	ica U. S.—	"	111	"	"
Del Santos	"	"	"	"	W.I. Plate	"	110	"	"
Del Mar	"	10,073	57,438 cu. ft.	119		Ingalls	439	"	9,350
Del Norte	"	"	"	"		"	437	"	"
Del Sud	"	"	"	"		"	438	"	"
Del Oro	Diesel	6,947	None	12	U. S. Gulf	Pennsylvania	314	..	.....
Del Rio	"	5,163	"	"	W.I. No. Br.	"	267	..	.....
Del Sol	"	7,061	"	"	West Africa	"	294	..	.....
Del Monte	Steam	6,857	5,096	"	U. S. Gulf	Pusey & Jones	1100	TU	4,400
Del Campo	"	5,124	None	"	W.I.	Pennsylvania	256	..	.....
Del Viento	Diesel	6,933	"	"	Plate	"	260	..	.....
Moore-McCormack Lines, Inc.									
Mormacgulf	C3-SA-5	7,909	69,728	12	United States	Ingalls	446	TU	9,350
Mormacisle	"	"	"	"	So. America	"	447	"	"
Mormacdawn	"	"	"	"	and or	"	448	"	"
Mormacland	"	"	"	"	Europe	"	449	"	"
Mormacmail	"	"	"	"	"	"	450	"	"
Mormacpenn	"	"	"	"	"	"	451	"	"
Mormacsaga	"	"	"	"	"	"	452	"	"
Mormacmoon	C3-SA-2	7,939	None	"	"	"	253	"	"
Mormactide	C3 (Sp.)	7,954	38,040	"	"	"	255	"	"
Mormacrio	C3-SA-2	7,888	42,772	"	"	"	440	"	"
Mormacport	C3	7,784	None	"	"	Federal	162	"	"
Mormacyork	C3 (Sp.)	7,796	35,410	"	"	"	167	"	"
Mormacwave	C3	7,808	13,640	"	"	Western Pipe	79	"	"
Mormacsea	C3 (Sp.)	7,773	36,511	"	"	Moore DD	197	"	"
Mormacstar	"	7,731	36,511	"	"	"	196	"	"
Mormacsun	"	7,773	36,511	"	"	"	198	"	"
Mormacmar	C3-SA-2	8,007	33,476	"	"	Ingalls	325	"	"
Mormacrey	"	7,980	33,476	"	"	"	415	"	9,350
Mormacsurf	"	"	"	"	"	"	417	"	"
Mormacdove	C2-SB 1	6,191	None	"	"	Moore	262	"	6,600
Mormachawk	"	6,214	"	"	"	Moore	298	"	"
Mormackite	"	"	"	"	"	"	301	"	"
Mormacowl	"	6,195	"	"	"	"	245	"	"
Mormacteal	"	6,214	"	"	"	"	251	"	"
Mormacwren	"	6,214	"	"	"	"	271	"	"
Mormacawan	C2 (Sp.)	7,194	28,430	None	"	Federal	158	"	"
Mormacelm	VC2-AP3	7,606	None	"	"	Oregon	1257	"	9,350
Mormacfir	"	"	"	"	"	"	1262	"	"
Mormacpine	"	"	"	"	"	"	1225	"	"
Mormacoak	"	7,607	"	"	"	Permanente	525	R	2,500
Mormacdale	C1-A	5,105	"	12	"	Pennsylvania	228	..	.....
Mormaclark	C1-B	6,711	"	"	"	Sun S. B.	180	D	6,000
Mormacreed	C1-B	6,711	"	"	"	Consolidated	225	Tu	4,400
Mormactern	C1-B	"	1,120	"	"	"	227	"	4,400
Mormacfuel	T-2	10,449	None	4	South Amer- ica & or coastwise	Kaiser, Oregon	12	TE	7,240

Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
Mount SS Corp.									
Alabaman	Freighter	7,176			Foreign	Delta S. B.	155	R	2,500
Arkansan	"	7,210			"	Bethlehem	2363	R	2,500
Carolinian	"	7,191			"	.....	....	..	.....
Munargo Line Company									
Cape Ann	Cargo	6,711		12	Caribbean	Consolidated	246	TU	4,400
Cape Avinof	"	5,124		8	"	Pusey & Jones	1101	"	4,400
Fiador Knot	"	3,805	9,830		"	Walter Butler	341	D	1,700
Lever's Bend	"	"	"		"	"	342	"	"
Mystic SS Div.									
Arlington	Collier	6,643	None	None	Coastwise	Delta S. B.	88	R	2,500
Boston	"	"	"	"	Coal	"	142	R	"
Concord	"	"	"	"	"	"	177	"	2,500
Everett	"	"	"	"	"	"	184	"	"
Lexington	"	"	"	"	"	"	166	"	"
Malden	"	"	"	"	"	"	178	"	"
Melrose	"	"	"	"	"	"	187	"	"
Newton	"	"	"	"	"	"	150	"	"
Reading	"	"	"	"	"	"	185	"	"
Thomas P. Beal	"	6,032	"	"	"	Bath Iron Wks.	86	..	.....
Walter D. Noyes	"	4,387	"	"	"	Newport News	189	..	.....
Winchester	"	6,643	"	"	"	Sun	292	TE	7,240
Medford	"	"	"	"	"	Delta	179	R	2,500
Charlestown	"	"	"	"	"	"	174	"	"
New York and Cuba Mail Steamship Co.									
Agwidale	C2	7,244	13,470	12	N.Y.-Havana	.....	....	..	.....
Agwiking	"	7,228	14,033	"	"	Moore	257	TU	6,600
Agwimonte	C1-B	6,711		"	N.Y.-V.V.-Tamp	.....	....	..	.....
Agwiprincess	"	"		"	N.Y.-V.C.-Tamp.	.....	....	..	.....
Agwistar	"	"		"	"	.....	....	..	.....
North American Shipping and Trading Co., Inc.									
SS Seven Seas	Tanker	10,172			Foreign	Sun	300	TE	7,240
SS Jeanny	T2-SE-A1	10,297			"	Sun	432	"	"
SS Memory	"	10,173			"	Alabama DD	321	"	"
SS Merrimac	"	10,172			"	"	344	"	"
SS Monitor	"	10,173			"	"	292	"	"
SS Mermaid	"	10,173			"	"	314	R	2,500
SS Mohican	EC2-S-C1 Liberty	7,210			"	Bethlehem F.	2411	..	.....
The Oceanic SS Co.									
Sonoma	Cargo	8,528			Australasian	No. Carolina	100	TU	6,600
Ventura	"	8,175			"	"	145	"	"
Sierra	"	8,178			"	"	139	"	"
Alameda	"	8,218			"	"	133	"	"
Oliver J. Olson & Co.									
Barbara Olson	Freighter	2,146			Pac. Coast-	Manitowac S. B.	97	..	.....
Howard Olson	"	2,477			wise	Pusey & Jones	203	..	.....
George Olson	"	3,321			"	Gt. Lks. Eng. W.	175	..	.....
Oliver Olson	"	2,235			"	Albina Eng.	3	..	.....
Karen Olson	"	2,119			"	Albina Eng	1	..	.....
Mary Olson	"	3,474			"	.....	....	..	.....
Olympic SS Co., Inc.									
SS Olympic Pioneer	Liberty	7,216	None	None	Offshore	Permanente	2783	R	2,500
Pacific-Argentine-Brazil Line									
P & T Seafarer	C-3	8,011	44,961balcft.	12	Pacific Coast	Ingalls S. B.	410	TU	9,350
P & T Forester	C-3	8,007	41,007 "	"	West Indies	"	414	"	"
P & T Trader	"	7,958	....	"	E. Coast S.	"	419	"	"
P & T Pathfinder	"	7,951	....	"	America	"	326	"	"
Pacific-Atlantic SS Co.									
SS Oregon	C2	8,292	None	None	Trans-Pacific	Moore DD	285	TU	6,600
MS Idaho	C1-B	6,756	"	"	"	Seattle Tacoma	5	"	"
SS Arizona	VC2	7,607	"	"	"	Oregon S. B.	1237	TU	9,350
SS Montana	VC2	7,607	"	"	"	Oregon S. B.	1226	"	"
Pacific Far East Line, Inc.									
Pacific Bear	C2-AJ1	10,775		12	W. C. Orient	No Carolina	102	TU	6,600
China Bear	"	"		"	"	"	122	"	"
Philippine Bear	C2-AJ3	"		"	"	"	128	"	"
California Bear	"	"		"	"	"	132	"	"
Indian Bear	"	"		"	"	"	137	"	"
Pacific Tankers, Inc.									
Montebello Hills	T2-SE-A1	10,442	2,420 cu. ft.	None	Foreign	Marinship	62	TE	7,24
McKittrick Hills	"	"	"	"	"	"	65	"	"
Pacific Trans. Lines, Inc.									
Pacific Transport	C3	7,773	55,000	12	Transpacific	Ingalls S. B.	441	TU	9,350
Philippine Transport	"	"	"	"	"	"	413	"	"
China Transport	"	"	"	"	"	"	327	"	"
America Transport	C-3	"	None	"		.....	....	..	.....
Honkong Transport	A-P3	7,607.5	"	None		.....	....	..	.....
Paco Tankers, Inc. c/o Pennsylvania Shipping Company									
Chancellorsville	T2 Tanker	10,428				Sun S. B.	295	TE	7,240
Fredericksburg	"	10,398				"	294	"	"
Kittanning	"	10,428				"	322	"	"
Natico	Liberty	7,306				.....	....	..	.....
Northfield	T2 Tanker	10,448				Kaiser	9	TE	7,240
Paco	Liberty	7,304				.....	....	..	.....
Perryville	T2 Tanker	10,403				Sun	263	TE	7,240
Petersburg	"	10,457				Sun	296	"	"
Panama Line									
Ancon	Pass.-Cargo	9,978	75,059	216	N.Y.Canal	Bethlehem	1468	TU	10,000
Cristobal	"	9,978	75,059	"	Zone	"	1469	"	"
Panama	"	9,978	"	"	"	"	1467	"	"
Pan American Petroleum & Transport Co.									
Pan-Maine	Tanker	7,236			Gulf-Atlan.	Federal	141	TU	3,180
Pan-Florida	"	"			Coast Ports	"	142	"	"
Pan-Maryland	"	7,700			"	"	150	"	3,000
Pan-Rhode Island	"	7,742			"	"	189	"	"
Pan-Pennsylvania	"	10,172			"	Alabama	327	TE	6,000
Pan-New York	"	10,195			"	Sun	264	"	"
Pan-Virginia	"	10,172			"	Pusey & Jones	12	"	"
Pan-Carolinas	"	10,195			"	Sun	289	"	"
The Peninsular & Occidental Steamship Co.									
Florida	Pass-Cargo	4,956	None	725	Caribbean	Newport News	342	..	.....

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AMERICAN OWNED FLEETS *(Continued)*

Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
The Permanente SS Corp.									
SS Permanente Silverbow	VC2-AP3	7,628	None	None	Trans of bulk cement, gypsum rock.	Oregon S. B.	1024	TU	9,350
SS Diamond Cement	Steam-Frtr.	4,005	"	"	Trans of lime rock.	Yokahama Dock	57	..	.....
Petroleum Nav. Co.									
MV Penaco	Tanker	1,223	None	None	Petroleum	Bethlehem	5326	..	.....
MV Dispatch	"	461	"	"	"	Charleston D.D.	110	..	.....
MV Express	"	240	"	"	"	J. Supple	....	..	.....
Pocahontas SS Co.									
Oakey L. Alexander	Collier	7,751	None	None	Coastwise	Bethlehem F.	2457	TU	6,600
Isaac T. Mann	"	5,266	"	"	Coal	N.Y. Shipbldg.	177	R	2,800
Harry Bowen	"	3,522	"	"	"	"	132	"	1,750
Jonancy	"	3,289	"	"	"	"	165	"	1,800
Sylayl	"	"	"	"	"	"	166	"	1,800
Freeman	"	3,350	"	"	"	"	183	"	"
James Ellwood Jones	"	3,372	"	"	"	"	204	"	"
Polarus Steamship Co., Inc.									
Polarus Pioneer	Liberty	7,176	....	....	Tramp	J. A. Jones	70	R	2,500
William R. Lewis	"	7,247	....	....	"	Todd H.	189	"	"
Polarus Trader	"	"	....	....	"	"	163	"	"
Polarus Sailor	"	7,176	....	....	"	No. Carolina	161	"	"
Polarusoil	Lib. Tnkr.	7,218	....	....	Coastwise	Delta S. B.	70	"	"
Pope & Talbot, Inc.									
P & T Navigator	C-3	7,929	....	12	Intercoastal	Ingalls S. B.	418	TU	9,350
P & T Explorer	"	7,933	....	"	& Worldwide	"	421	"	"
P & T Adventurer	VC2-AP3	7,606	....	None	"	.....	....	..	.....
Prudential SS Corp									
SS George Uhler	Liberty	7,600	None	12	E. Medit'n	Bethlehem F.	2233	R	2,500
SS Sarah Orne Jewett		7,600	"	"	"	New England	2219	R	2,500
SS Eastern Glenn		4,066	"	None	Coastwise	Bethlehem	168	..	.....
The Pure Oil Co.									
Pure Oil	Tanker	9,942.67	None	None	Coastwise	Bethlehem Sp.	4430	TU	7,700
David D. Irwin	"	10,646.55	"	"	"	Sun	228	"	12,800
Richfield Oil Corp.									
SS Charles S. Jones	Tank Stmr.	8,111			Pac. Coastwise	Bethlehem SP.	4365	TU	3,960
SS Sparrows Point	"	10,180			"	Harlan & Hollingsworth	....	..	.....
SS Coxcomb Hill	"	10,448			"	Kaiser Co., Inc.	152	TE	7,240
SS James Cook	"	7,208			"	California S. B.	T7	R	2,500
Sabine Trans. Co., Inc.									
SS L. L. Abshire	Tanker	6,353				W. Cramp & Son	51	..	.....
SS R. P. Smith	"	10,296				"	428	..	.....
SS C. B. Watson	"	7,096				.....	....	..	.....
SS Henry M. Dawes	"	10,441				Harlan & Hollingsworth	440	..	.....
SS Rawleigh Warner	"	5,330				Bethlehem S. B.	3451	R	2,700
SS Munger T. Ball	"	8,071				Welding Shipyd.	10	TU	9 340
SS Walter Dumont	"	7,281				Delta Shipbldg.	81	R	2,500
Schafer Bros. SS Lines									
SS Margaret Schafer	Lbr. Carrier	3,460			Pac. Coastwise	Manitowac S. B.	98	R	1,200
Seatrain Lines, Inc.									
Seatrain New York	Car-Carrier	8,067	26 Reefer Cars	None	Coastwise	Sun S. B.	146	TU	8,800
Seatrain Havana	"	"	"		Atlantic & Gulf	"	147	TU	8,800
Seatrain Texas	"	8,108	"		"	"	191	TU	8,800
Seatrain New Jersey	"	"	"		"	"	192	TU	8,800
Seatrain New Orleans	"	7,636	"		Gulf-Cuba	Swan, Hunter & Wigham Richardson	1349	..	.....
Seas Shipping Co. Inc. (Robin Line)									
Robin Dencaster	C2-S	7,101	11,500	12	So. & E. Afr.	Bethlehem Sp.	4342	TU	7,000
Robin Kettering	"	"	"	"	"	"	4343	"	"
Robin Locksley	"	"	"	"	"	"	4341	"	"
Robin Sherwood	"	"	"	"	"	"	4350	"	"
Robin Tuxford	"	"	"	"	"	"	4351	"	"
Robin Wentley	"	"	"	"	"	"	4352	"	"
Robin Goodfellow	C3	7,886	None	"	"	Ingalls S. B.	425	"	9,350
Robin Gray	"	8,004	"	"	"	"	328	"	"
Robin Hood	"	7,966	"	"	"	"	426	"	"
Robin Kirk	"	8,024	"	"	"	Seattle-Tacoma	30	"	8,500
Robin Mowbray	"	8,000	"	"	"	"	27	"	"
Robin Trant	"	"	"	"	"	"	24	"	"
Shepard SS Company									
Paul Revere	C3	7,047	None	12	East Coast	California	5	R	2,500
Minute Man	"	"	"	"	So. America	Bethlehem Sp.	4392	TU	8,800
Bostonian	"	"	"	"	"	Bethlehem Steel	1474	"	"
Bunker Hill	"	"	"	"	"	"	1483	"	"
Sinclair Refining Co.									
Albert E. Watts	Tanker	10,907	None	None	Ocean	Federal S. B.	190	TU	6,600
Daniel Pierce	"	4,887.69	"	"	"	Bethlehem	3476	..	.....
E. R. Kemp	"	"	"	"	"	"	3475	..	.....
E. W. Sinclair	"	10,907	"	"	"	Federal	192	TU	6,600
Flagship Sinco	"	10,803.39	"	"	"	Bethlehem	1492	TU	6,600
George MacDonald	"	10,164.84	"	"	"	"	4380	"	"
L. V. Stanford	"	7,137.76	"	"	"	"	3474	..	.....
Samuel L. Fuller	"	9,894.48	"	"	"	Bethlehem Sp.	4355	TU	12,000
Sheldon Clark	"	10,804	"	"	"	Bethlehem	1493	"	6,600
Sinclair H. C.	"	7,874.72	"	"	"	"	1491	"	4,400
Sinclair Opaline	"	"	"	"	"	"	1488	"	4,400
Sinclair Rubilene	"	"	"	"	"	"	1489	"	"
Sinclair Superflame	"	"	"	"	"	"	1490	"	"
Socony Vacuum Oil Co., Inc.									
Calusa	Tanker	10,173			Atlantic-Coastwise	Sun S. B.	245	TE	7,240
Colina	"	10,199			"	"	251	"	"
Conastoga	"	"			"	"	277	"	"
Magnolia	"	9,512			"	New York S. B.	415	..	.....
Mobilfuel	"	10,222			"	Bethlehem	4332	TU	4,400
Mobilgas	"	9,925			"	Sun	158	"	"
Mobilight	"	10,205			"	Bethlehem Sp.	4377	"	5,280
Mobiloil	"	"			"	"	4376	"	"
Mobilube	"	10,222			"	Bethlehem	4333	"	4,400
Sachem	"	9,910			"	Bethlehem Sp.	4385	"	7,700
Sacona	"	9,933			"	"	4388	"	"
Saconnet	"	"			"	"	4423	"	"
Samoset	"	9,910			"	"	4384	"	"
Satucket	"	9,933			"	"	4390	"	"
Saucon	"	"			"	"	4389	"	"
Shabonee	"	9,911			"	"	4386	"	"
Siwanoy	"	9,879			"	"	4387	"	"
Socony-Vacuum	"	9,512			"	N. Y. Shipbldg.	414	..	.....
Syosset	"	9,933			"	Bethlehem	4426	TU	7,700
Tascalusa	"	9,890			"	Bethlehem Sp.	4356	"	12,000
Tatarrax	"	"			"	"	4359	"	"
South Atlantic Steamship Line, Inc.									
Southland	C2-S-AJ1	8,186	None	12	Between U. S. Atlantic Ports (Hampton Roads to Key West) and U. K., Eire and Northern Continental Europe	No. Carolina	119	TU	6,600
Southport	"	8,134	"	"		"	141	"	"
Southstar	"	8,173	"	"		"	150	"	"
Southwind	"	8,185	"	"		"	147	"	"
Sprague Steamship Co.									
Celestial	C-2	6,111	None	12	E.C. So. America	Moore DD	259	TU	6,600
Wideawake	"	6,156	"	"		"	263	TU	6,600
Penobscot	Bulk Car.	6,643	"	None	Coastwise	Delta	175	R	2,500
Glamorgan Seam	"	"	"	"	"	"	176	"	"
Seaconnet	"	"	"	"	"	"	168	"	"
Black Point	"	6,774	"	"	"	Bethlehem F.	2315	"	"
P. W. Sprague	"	6,028	"	"	"	"	2157	"	"
Middlesex	"	4,727	"	"	"	New York S. B.	129	..	.....
Standard of California									
Alaska Standard	Tanker	1,319			Alaska-Pac.	Bethlehem	5318	..	.....
Chevron	"	3,150			"	Todd-Houston	219	D	1,400
F. S. Bryant	"	8 489			"	Sun S. B.	562	TU	5,500
Fort Clatsop	"	10,449			"	Kaiser	97	TE	7,240
H. D. Collier	"	10,246			"	Sun S. B.	541	"	"
Idaho Falls	"	10,449			"	Kaiser	59	"	"
J. L. Hanna	"	10,246			"	Sun S. B.	531	"	"
J. H. MacGaregill	"	"			"	"	540	"	"
J. H. McEachern	"	6,197			"	Union Iron	115	..	.....
J. H. Tuttle	"	11,658			"	Sun S. B.	238	TU	9,020
M. E. Lombardi	"	5,326			"	"	193	"	3,410
R. G. Follis	"	8,489			"	"	563	"	5,500
R. C. Stoner	"	11,658			"	"	239	"	9,020
W. H. Berg	"	8,298			"	"	166	"	3,960
Standard Fruit and SS Co.									
Atlantida	Pass. Ref.	4,191	151127CF	48	U. S. Gulf and Cuba, Haiti, Honduras, Panama, Mex.	Kiangnan Dock	319	..	.....
Cefalu	"	5,221	179700CF	60		.....	....	..	.....
Contessa	"	5,512	"	"		.....	....	..	.....
Gatun	"	3,361	129826CF	12		Workman Clark	485	..	.....
Granada	"	3,331	"	"		....	....	..	.....
St. Mary	Ref. Gargo	2,141	91022CF	None		Shockey Boiler	2	..	.....
Yoro	"	1,697	125214CF	12		.....	.....	..	.....
Standard Oil Co. (N. J.)									
Darthmouth	Tanker	9,879				Bethlehem Sp.	4383	TU	7,700
Esso Allentown	"	10,449				Kaiser, Ore.	26	TE	7,240
Esso Annapolis	"	9,888				Bethlehem Sp.	4373	TU	7,700
Esso Asheville	"	10,449				Kaiser	52	TE	7,240
Esso Aruba	"	8,773				Swan-Hunter	1465	R	3,600
Esso Augusta	"	11,237				Sun	195	D	7,500
Esso Baltimore	"	7,949				Bethlehem	4308	TU	4,400
Esso Bayonne	"	7,697				Federal S. B.	143	"	3,300
Esso Baytown	"	7,992				Sun S. B.	162	"	3,960
Esso Bayway	"	7,699				Federal	144	"	3,300
Esso Bethlehem	"	10,113				Sun	217	"	9,900
Esso Binghamton	"	10,173				Alabama	322	TE	7,240
Esso Bridgeport	"	"				"	335	"	"
Esso Burlington	"	"				"	249	"	"
Esso Buffalo	"	11,349				Sun	214	TU	9,020
Esso Camden	"	10,297				"	413	TE	7,240
Esso Charleston	"	7,949				Bethlehem Md.	4309	TU	4,000
Esso Charlotte	"	10,297				Sun	302	TE	7,240
Esso Chattanooga	"	10,096				Sun	218	TU	9,900
Esso Concord	"	7,699				Federal	178	"	3,300
Esso Cumberland	"	10,297				Sun	412	TE	7,240
Esso Everett	"	10,449				Kaiser	81	TE	7,240
Esso Greensboro	"	10,195				Sun	283	"	"
Esso Greenville	"	10,297				"	403	"	"
Esso Hartford	"	9,887				Bethlehem Sp.	4367	TU	7,700
Esso Linden	"	10,287				Sun	423	TE	7,240
Esso Little Rock	"	11,237				"	197	D	7,750
Esso Manhattan	"	10,173				"	267	TE	7,240
Esso Memphis	"	10,297				"	415	TE	"
Esso Montpelier	"	7,699				Federal	177	TU	3,300
Esso Nashville	"	7,943				Bethlehem Md.	4349	"	4,000
Esso New Haven	"	10,318				Sun	407	TE	7,240
Esso New Orleans	"	9,956				"	235	TU	9,900
Esso Norfolk	"	10,170				"	274	TE	7,240
Esso Parkersburg	"	10,318				"	410	"	7,240
Esso Paterson	"	10,170				"	272	"	"
Esso Philadelphia	"	11,236				"	219	D	7,500
Esso Pittsburgh	"	"				"	220	D	7,500
Esso Portland	"	10,318				"	406	TE	7,240
Esso Raleigh	"	9,956				"	237	TU	9,900
Esso Reading	"	10,297				"	398	TE	7,240
Esso Richmond	"	11,345				"	215	TU	9,020
Esso Roanoke	"	10,297				"	416	TE	7,240
Esso Rochester	"	11,345				"	213	TU	9,020
Esso Scranton	"	10,297				"	414	TE	7,240
Esso Springfield	"	10,297				"	392	"	"
Esso Shreveport	"	10,195				"	291	"	"
Esso Syracuse	"	11,363				"	216	TU	9,020
Esso Utica	"	10,297				"	436	TE	7,240
Esso Wilmington	"	10,170				"	270	TE	"
Esso Worcester	"	10,449				Kaiser	142	"	"
G. Harrison Smith	"	11,753				Federal	113	TU	4,000
W. S. Farish	"	11,787				"	114	"	4,000
Wallace E. Pratt	"	7,992				Sun	161	"	3,960
Esso Zurich	"	17,647				"	566	"	13,750
Esso Suez	"	17,061				Newport News	475	"	13,750
Stanolind Marine Transport Co.									
F. O. Prior	Tanker	10,172			Gulf-Atlantic Coast Ports	Alabama	247	TE	7,240
A. W. Peake	"	"				"	270	"	"
R. F. McConnell	"	"				"	288	"	"

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AMERICAN OWNED FLEETS *(Continued)*

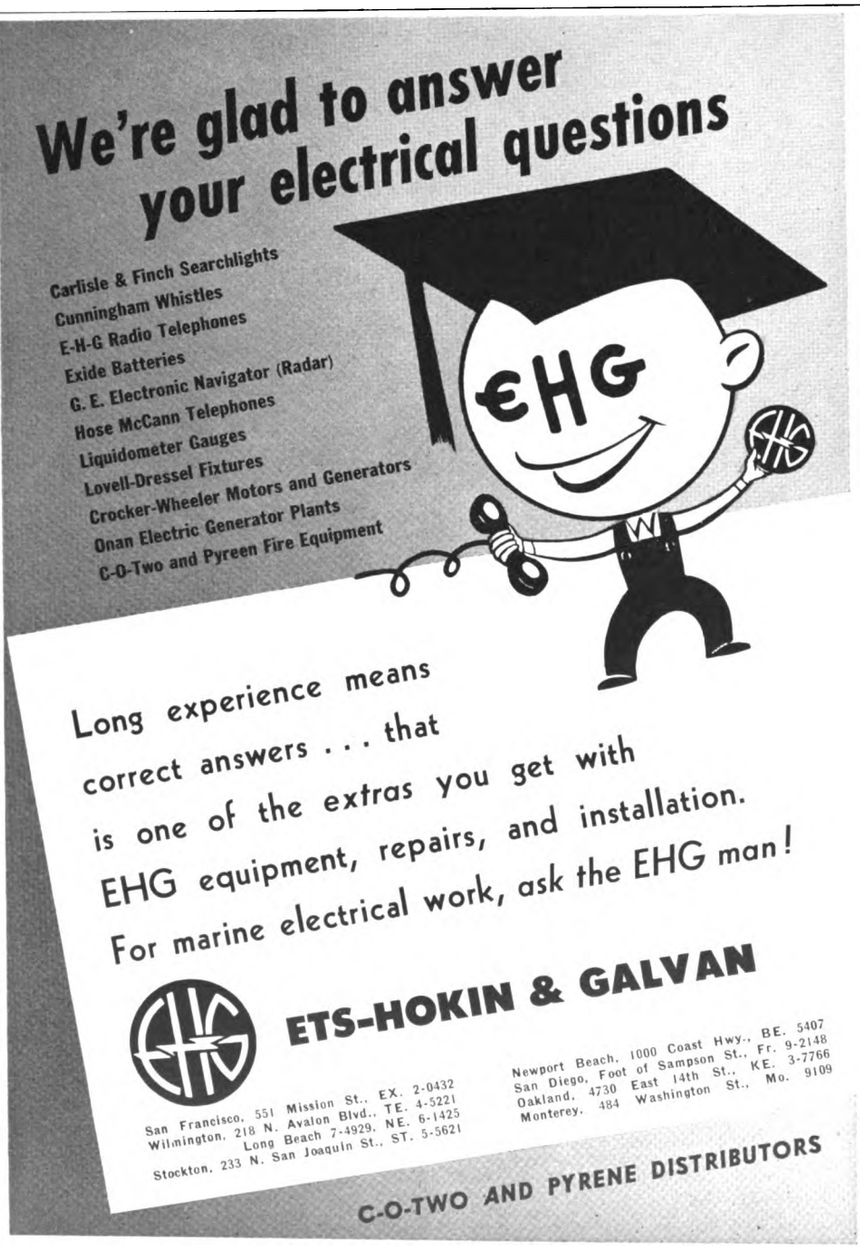
Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
States Marine Corp.									
Cotton State	C2	6,103		12		Consolidated	1358	TU	6,600
Empire State	"	6,214		"		Moore	295	"	"
Garden State	"	6,103		"		Consolidated	1360	"	"
Golden State	"	6,103		"		"	1362	"	"
Magnolia State	"	"		"		"	1361	"	"
Blue Grass State	Liberty	7,247			South Africa	Houston	128	R	2,500
Evergreen State	"	"		"	Far East	Todd	188	"	"
Hoosier State	"	7,240			and Europe	St. Johns	44	"	"
Keystone State	"	7,210				Bethlehem F.	2382	"	"
Lone Star State	"	7,176				New England	3098	"	"
Old Dominion State	"	7,210				Bethlehem F.	2346	"	"
Palmetto State	"	7,198				Southeastern	87	"	"
Peach Tree State	"	7,176				New England	3107	"	"
Volunteer State	"	7,216				Permanente Yd 2	2689	"	"
Wolverine State	"	7,176				New England	3043	"	"
States Steamship Company									
SS California	EC2	7,216	None	None	Trans-Pacific	Permanente Yd 2	2782	R	2,500
SS Charles E. Dant	C2	8,292	"	"	"	Moore DD	256	TU	6,600
SS Colorado	VC2	7,606	"	"	"	Oregon S. B.	1266	"	9,350
SS Washington	EC2	7,212	"	"	"	Parmanente	2268	R	2,500
SS Wyoming	VC2	7,606	"	"	"	Oregon	1255	TU	9,350
Stockard Steamship Corp.									
Caribstar	Tanker	7,218	None	None	Coastwise	Delta	76	R	2,500
Sun Oil Company									
America Sun	Motor	11,355	17,955		Gulf-No.	Sun S. B.	196	D	7,500
Chester Sun	"	9,097	14,584		Hatteras	"	122	"	2,800
Western Sun	"	9,100	"		"	"	123	"	"
Eastern Sun	"	"	"		"	"	124	"	"
Northern Sun	"	8,923	14,677		"	"	131	"	"
Southern Sun	"	8,952	14,828		"	"	132	"	"
Atlantic Sun	Motor	11,401			"	"	323	"	7,500
Bidwell	"	6,837			"	Baltimore	112	"	2,700
Delaware Sun	Steam	8,964			"	Sun	43	R	3,000
Sabine Sun	Motor	11,359			"	"	234	D	7,500
MS Sun	"	9,002			"	"	110	"	2,800
Texas Sun	"	9,968			"	"	159	"	5,400
Pennsylvania Sun	"	11,394			"	"	168	"	7,200
Sunoil	T2	10,296			"	"	427	TE	7,240
Dynafuel	T1	3,100			Coastwise	St. Johns	86	D	1,400
Mercury Sun	T-2	10,296			Gulf.—No.	Sun	440	TE	7,240
Ohio Sun	"	10,195			Hatteras	"	306	"	"
Michigan Sun	"	10,172			"	"	265	"	"
Maryland Sun	"	10,296			"	"	441	"	"
Louisiana Sun	"	10,198			"	"	279	"	6,000
Sunoco	Motor	1,267				"	96	D	720
Maumee Sun	"	1,139				E. Coast Ship.	23	"	"
Myatic Sun	"	1,139				"	20	"	814
Coyuga Sun	"	499.7				Sun	118	"	300
Passaic Sun	"	533 0				"	130	"	"
Raritan Sun	"	533.0				"	129	"	"
Seneca Sun	"	499.7				"	119	"	"
Sword Line, Inc.									
Western Sword	Steam	4,794	None	None	Foreign	Todd	11	..	.....
Arizona Sword	C1-MT-BU1	3,800	"	"	Coastwise	Albina	218	..	.....
California Sword	"	"	"	"	"	"	216	..	.....
Oregon Sword	"	"	"	"	"	"	215	..	.....
Alabama Sword	Steam	4,233	"	"	"	Nakekov	.....	..	.....
Florida	"	"	"	"	"	Helsingors Jernskibs	.....	..	.....
Coalinja Hills	"	10,441	"	"	Foreign	Marinship	61	TE	7,240
The Texas Company									
SS Arizona	Tanker	5,174				Petroleum	Bethlehem Del.	3462	R	2,700
SS Arkansas	"	6,452				"	Texas S. S.	13	"	3,100
SS Buena Vista	"	10,198				"	Sun	280	TE	7,240
SS California	"	10,388				"	Newport News	260	R	3,000
SS Cerro Gordo	"	10,195				"	Sun	281	TE	7,240
SS Churubusco	"	"				"	"	254	"	"
SS Colorado	"	9,310				"	"	224	TU	9,900
SS Contreras	"	10,195				"	"	282	TE	7,240
SS Delaware	"	9,331				"	"	325	TU	10,000
MV Florida	"	8,572				"	"	164	D	4,850
SS Georgia	"	9,319				"	"	324	TU	10,000
SS Indiana	"	9,331				"	"	326	"	"
SS Maine	"	3,371				"	Staten Island	725	R	1,800
SS Michigan	"	3,827				"	Chicago S. B.	53	"	1,200
SS Montana	"	9,319				"	Sun	225	TU	9,900
SS Nevada	"	6,915				"	Bethlehem Md.	4177	R	3,350
MV Rhode Island	"	8,580				"	Sun	165	D	4,850
SS Roanoke	"	6,425				"	Texas S. S.	21	R	3,100
SS South Mountain	"	10,296				"	Sun	303	TE	7,240
SS Vera Cruz	"	10,198				"	"	253	"	"
SS Williamsburg	"	10,296				"	"	304	"	"
SS Alabama	"	"				"	"	453	"	"
MV Cristobal	"	3,250				"	J. A. Jones	92	D	1,400
SS Illinois	"	10,296				"	Sun	455	TE	7,240
SS Louisiana	"	10,317				"	"	333	"	"
SS New Jersey	"	10,296				"	"	439	"	"
SS North Carolina	"	10,535				"	Alabama	304	"	"
SS South Carolina	"	10,551				"	Sun	446	"	"
Tide Water Associated Oil Co. (Eastern Division)									
SS Byron D. Bonson	Steam Tk.	10,296				Sun	417	TE	7,240
SS David McKelvy	"	"			Crude	"	445	"	"
SS Samuel Q. Brown	"	"			Petroleum	"	429	"	"
SS Wm. F. Humphrey	"	"			from U. S.	"	422	"	"
SS Robert E. Hopkins	"	"			Gulf Ports	"	485	"	"
SS Axtell J. Byles	"	9,059			to New York	"	104	R	3,600
SS Frank Haskell	"	10,296			"	"	444	TE	7,240
SS Mericos H. Whittier	"	6,972			"	Bethlehem	4187	..	.....
SS Edward L. Shea	"	6,746			"	New York Ship.	265	..	.....
Tide Water Associated Oil Co. (Western Division)									
SS Associated	Tanker	8,429				Sun	171	TU	3,960
SS Frank G. Drum	"	7,156.6				Bethlehem	5308	..	.....
SS Solana	"	6,702				New York S. B	268	..	.....
SS Paul Shoup	"	6,817				Merchant	382	..	.....
MS Tide Water	"	8,886				Sun	125	D	2,800
MS Tide Water Associated	"	8,906				"	126	"	"
M. & J. Tracy, Inc.									
SS Michael Tracy	Collier	6,643			Coastwise	Delta	183	R	2,500
SS Thomas Tracy	"	"			"	"	158	"	"
Trinidad Corporation									
Caribbean	Tanker	10,169				Sun	273	TE	7,240
Clarke's Wharf	"	10,296				"	478	TE	"
Fort Mercer	"	10,266				"	534	"	"
Fruitvale Hills	"	10,385				Marinship	92	"	"
La Brea Hills	"	10,441				"	75	"	"
Lyon's Creek	"	10,296				Sun	393	"	"
New Market	"	10,296				"	433	"	"
Tillamook	"	10,448				Kaiser, Ore.	48	"	"
Redstone	"	10,296				Sun	469	"	"
Union Oil Co. of California									
A. C. Rubel	Tanker	8,221			Oil Trade	Bethlehem Sp.	4360	TU	3,960
Lompoc	"	10,448			"	Kaiser, Ore.	148	TE	7,240
L. P. St. Clair	"	8,066			"	Bethlehem	4334	TU	4,000
Oleum	"	10,448			"	Kaiser, Ore.	129	TE	7,240
Paul M. Gregg	"	8,187			"	Bethlehem	4357	TU	3,960
Santa Paula	"	10,296			"	Sun	482	TE	7,240
Victor H Kelly	"				"	Bethlehem	4340	TU	4,000
Unoba	"	634			"	Odenbach	17	..	.....
The Union Sulphur Co.									
Herman Frasch	Liberty	7,191			Sulph.-Lum.	Bethlehem F.	2009	R	2,500
Union Sulphur	"	7,178			"	California	84	"	"
Sulphur Mines	"	"			"	Permanente Yd 1	2112	"	"
Herman F. Whiton	T2 Tanker	10,448			Oil	Kaiser, Ore.	34	TE	7,240
William A. M. Burden	"	"			"	"	8	"	"
United Fruit SS Corp.									
Cibao	Cargo	5,075	197,000	12	Caribbean	Bethlehem Sp.	4449	TU	6,050
Heredia	"	7,067	311,000	"	"	Newport News	459	"	13,200
Hibueras	"	5,075	197,000	"	"	Bethlehem Sp.	4454	"	6,050
Metapan	"	7,067	311,000	"	"	Newport News	460	"	13,200
Morazan	"	5,075	197,000	"	"	Bethlehem Sp.	4456	"	6,050
Parismina	"	7,067	311,000	"	"	Newport News	458	"	13,200
Quisqueya	"	5,075	197,000	"	"	Bethlehem Sp.	4450	"	6,050
Santo Cerro	"	"	"	"	"	"	4451	"	"
Sixaola	"	"	"	"	"	"	4452	"	"
Tivives	"	"	"	"	"	"	4453	"	"
Ulua	"	"	"	"	"	"	4455	"	"
Yaque	"	"	"	"	"	"	4448	"	"
United Mail SS Co.									
Antiqua	Passenger	6,995	176,000	99	Caribbean	Bethlehem, Mass.	1444	..	.....
Chiriqui	"	6,964	180,000	"	"	Newport News	346	..	.....
Cape Cod	Cargo	6,798	.....	8	"	Bethlehem, N.Y.	8018	TU	4,400
Cape Cumberland	"	6,711	.....	12	"	Consolidated	333	"	"
Comayagua	"	7,075	313,000	"	"	Gulf	23	"	13,200
Esparta	"	"	"	"	"	"	21	"	"
Fra Berlanga	"	"	"	"	"	"	18	"	13,200
Jamaica	Passenger	7,016	180,000	99	"	Newport News	354	..	.....
Junior	Cargo	7,075	313,000	12	"	Gulf	22	TU	13,200
Limon	"	"	"	"	"	"	20	"	"
Quiriqua	Passenger	6,983	176,000	99	"	.....	.....	.....	.....
San Jose	Cargo	7,075	313,000	12	"	Gulf	19	TU	13,200
Talamanca	Passenger	6,969	180,000	99	"	.....	.....	..	.....
Veragua	"	6,998	176,000	"	"	Beth. Mass.	1446	..	.....
United States Lines Company									
America	Passenger	26,315	32,903	1228	Trans-Atlan.	Newport News	369	Tu	37,400
American Attorney	Freighter	7,606	None	12	"	Bethlehem F.	2456	"	6,600
American Banker	"	8,211	"	"	"	No. Carolina	205	"	"
American Builder	"	8,330	"	"	"	Moore	286	"	"
American Chief	"	8,279	"	"	"	"	281	"	"
American Clipper	"	8,228	36,134	"	"	Al Larson	.....	..	.....
American Counselor	"	7,601	None	"	"	Bethlehem F.	2501	TU	6,600
American Defender	"	7,607	"	"	"	Permanente Yd 2	732	"	"
American Farmer	"	8,211	"	"	"	No. Carolina	206	"	"
American Flyer	"	8,327	"	"	"	Moore	296	"	"
American Forwarder	"	8,228	36,134	"	"	No. Carolina	233	"	"
American Harvester	"	8,287	None	"	"	"	219	"	"
American Importer	"	8,228	36,134	"	"	"	234	"	"
American Inventor	"	8,373	47,045	"	"	Federal	257	"	"
American Judge	"	7,607	None	"	"	California	V34	"	"
American Jurist	"	7,602	"	"	"	Bethlehem F.	2507	"	"
American Lawyer	"	7,607	"	"	"	Permanente Yd 2	755	"	"
American Leader	"	8,277	"	"	"	Moore	300	"	"
American Manufacturer	"	8,330	"	"	"	Consolidated	1364	"	"
American Merchant	"	8,228	36,134	"	"	No. Carolina	231	"	"
American Miller	"	8,321	None	"	"	Moore DD	228	"	"
American Packer	"	8,315	"	"	"	"	227	"	"
American Planter	"	8,250	"	"	"	"	225	"	"
American Press	"	8,277	"	"	"	"	291	"	"
American Producer	"	8,228	"	"	"	"	224	"	"
American Ranger	"	8,211	"	"	"	No. Carolina	204	"	"
American Reporter	"	8,287	"	"	"	"	221	"	"
American Scientist	"	8,239	"	"	"	Moore	226	"	"
American Scout	"	"	"	"	"	No. Carolina	236	"	"
American Shipper	"	"	"	"	"	"	232	"	"
American Traveler	"	"	"	"	"	"	237	"	"
American Veteran	"	8,279	None	"	"	Moore	290	"	"
Pioneer Bay	Far East	8,461	"	"	"	Federal	248	"	"
Pioneer Cove	"	8,266	"	"	"	Consolidated	1367	"	"
Pioneer Dale	"	8,281	"	"	"	No. Carolina	222	"	"
Pioneer Gem	Australian	8,228	42,894	"	"	"	230	"	"
Pioneer Glen	"	"	"	"	"	"	228	"	"
Pioneer Gulf	"	8,276	"	"	"	"	224	"	"
Pioneer Isle	"	8,380	46,023	"	"	Federal	256	"	"
Pioneer Lake	Far East	8,453	None	"	"	Federal	247	"	"
Pioneer Land	"	8,287	"	"	"	No. Carolina	223	"	"
Pioneer Mail	"	8,281	"	"	"	"	220	"	"
Pioneer Reef	Australian	8,257	46,779	"	"	Moore	229	"	"
Pioneer Sea	Far East	8,433	None	"	"	Federal	249	"	"
Pioneer Star	Australian	8,228	42,894	"	"	No. Carolina	229	"	"
Pioneer Tide	Far East	8,276	None	"	"	Consolidated	1359	"	"
Pioneer Wave	"	8,329	"	"	"	Moore	304	"	"
United States Petroleum Carriers, Inc.									
Fort Bridger	Stm. Tan.	10,172			Foreign	Alabama DD	289	TE	7,240
Camas Meadows	"	"			"	"	248	"	"
Lake George	"	"			"	Sun	320	"	"

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AMERICAN OWNED FLEETS *(Concluded)*

Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
Battle Rock	"	"			"	Kaiser, Ore.	55	"	"
Arickaree	"	"			"	Alabama	245	"	"
Camp Namanu	"	"			"	Kaiser	64	"	"
Stony Point	"	"			"	Kaiser	6	"	"
Waterman Steamship Corp.									
Afoundria	C2-S-E1	6,181	None	12	From U. S.	Gulf S. B.	14	TU	6,600
Alawai	C2-S-B1	6,175	"	"	No. Atlantic	No. Carolina	148	"	"
Andrew Jackson	C2-S-E1	6,165	"	"	Gulf and Pac-	Gulf	30	"	"
Azalea City	"	"	"	"	ific Coast to	"	8	"	"
Arizpa	"	6,064	"	"	Europe,	"	6	"	"
Beauregard	"	"	"	"	United King-	"	7	"	"
Bienville	"	7,626	"	"	dom, Med.	"	9	"	"
Claiborne	C2-S-B1	6,492	26,000 cu. ft.	"	Ports and	Federal	235	"	"
Choctaw	"	6,103	None	"	Orient	Moore	221	"	"
Citrus Packer	"	6,134	"	"	"	"	248	"	"
City of Alma	C2-S-E1	6,165	"	"	"	Gulf	31	"	"
Fairhope	C2-S-B1	6,214	"	"	"	Moore	243	"	"
Fairland	C2-S-E1	7,373	"	"	"	Gulf	3	"	"
Fairisle	"	6,165	"	"	"	"	2	"	"
Fairport	"	"	"	"	"	"	36	"	"
Gateway City	"	6,064	"	"	"	"	5	"	"
Golden City	C2-S-B1	6,133	"	"	"	Moore DD	254	"	"
Hastings	C2-S-E1	6,165	"	"	"	Gulf	28	"	"
Hurricane	C2-S-B1	6,214	"	"	"	Moore	282	"	"
Jean Lafitte	"	6,165	"	"	"	Gulf	11	"	"
Jeff Davis	"	6,119	"	"	"	Moore	230	"	"
John B. Waterman	C2-S-E1	6,165	"	"	"	Gulf	37	"	"
Kysha	"	"	"	"	"	"	34	"	"
Lafayette	C2-SR-1	8,199	"	"	"	No. Carolina	131	"	"
La Salle	C2-SE-1	6,126	"	"	"	Gulf	15	"	"
Maiden Creek	C2-SE-1	6,165	None	"	No. Atlantic	"	35	"	"
Madaket	C2-SE-1	"	"	"	Gulf and Pac.	"	29	"	"
Mobilian	C2-SB-1	6,108	"	"	Coast to	Moore	223	"	"
Noonday	"	8,285	"	"	East Gulf	No. Carolina	109	"	"
Ponce de Leon	"	8,199	"	"	Puerto Rico	"	136	"	"
Raphael Semmes	C2-SE-1	6,165	"	"	"	Gulf	4	"	"
Stonewall Jackson	C2-S-B1	6,130	"	"	"	Moore	220	"	"

Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade	Builder	Hull No.	Propulsion	Horse Power
Topa Topa	C2-SE-1	6,165	"	"	from U.S. N.	Gulf	32	"	"
War Hawk	C2-SB-1	.....	"	"	Atlan. Gulf	Moore	241	"	"
Wacosta	C2-SE-1	6,165	"	"	and Pacific	Gulf	24	"	"
Warrior	"	6,165	"	"	Coast to	"	10	"	"
Yaka	"	"	"	"	East Gulf	"	27	"	"
Young America	C2-SB-1	6,111	"	"		Moore	222	"	"
Monarch of the Seas	"	6,214	15,000 cu. ft.	"	E. Gulf	Gulf	249	"	"
Morning Light	"	"	"	"	Puerto Rico	Moore	266	"	"
Wild Ranger	"	6,103	"	"	"	Consolidated	1365	"	"
Autinious	C2-SE-1	6,165	None	"	E. Gulf No.	Gulf	26	"	"
Chickasaw	C2-F	6,131	"	"	Atlantic	Federal	185	"	"
De Soto	C2-SE-1	6,165	"	"	Coast of	Gulf	25	"	"
Iberville	"	"	"	"	U. S.	"	33	"	"
Wessel Duval & Co., Inc.									
Thomas F. Baker	Liberty	7,210	None	None	Worldwide	Bethlehem F.	2354	TU	6,600
West Coast Trans-Oceanic SS Line									
Portland Trader	EC2-SC-1	7,247	None	None	Tramp	Todd	205	R	2,500
Oregon Trader	"	7,210	"	"	"	.....	.....	..	.....
Columbia Trader	"	"	"	"	"	.....	.....	..	.....
Weyerhaeuser SS Co.									
F. E. Weyerhaeuser	Liberty	7,176			Intercoastal	Bethlehem F.	2360	R	2,500
F. S. Bell	"	"			"	Bethlehem F.	2277	"	"
J. P. Weyerhaeuser	"	"			"	.....	.....	..	.....
H. H. Irvine	"	"			"	.....	.....	..	.....
W. H. Peabody	"	"			"	.....	.....	..	.....
Geo. S. Long	"	"			"	.....	.....	..	.....
Wilmore SS Co., Inc.									
Berwindglen	Collier	4,411	6,600	None	Coast Trade	Bethlehem	1422	..	.....
Berwindvale	"	6,643	10,500	"	Hamp. Rds. Va. to New England Ports	Delta	170	R	2,500
World-Wide Tankers, Inc.									
John Goode	Tanker	7,208			Bulk Petroleum Carrier	California S. B.	T1	R	2,500



Disposition of the U.S.M.C. Emergency Tanker Fleet

(Continued from Page 103)

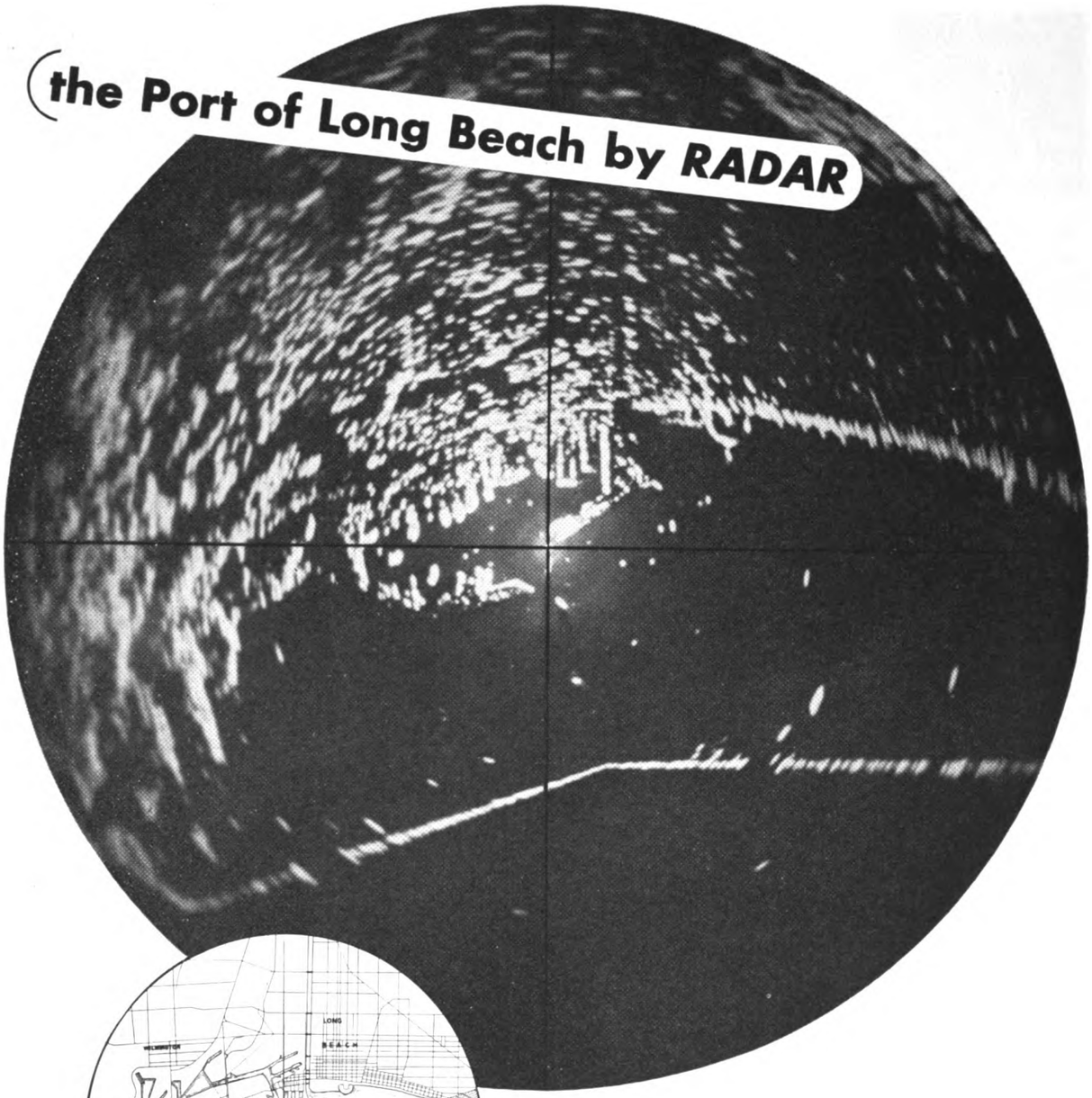
and A3 type were constructed by the Marinship Corporation, the principal difference being an increase in the horsepower of the propelling machinery from 7,240 to 10,000 shaft horsepower. These particular vessels were reserved for Navy Department use and although laid-up almost immediately following the termination of the war, all were put back into service in 1948, being operated for the account of the Navy by private American shipping interests. A few of the A1 type are also being operated for the account of the Navy.

While the T2 type tankers have a carrying capacity of approximately 140,000 barrels of oil and average about 16,600 tons deadweight, they are now dwarfed by the new super-size tankships being constructed in the United States and Great Britain with deadweight tonnages of 26,000, 28,000 and 30,000 tons and able to carry more than 230,000 barrels of oil cargo. The T2 tankers are 523 feet 6 inches long overall, 68 feet beam, 39 feet 3 inches depth, 30 feet 2 inches draft, and operate at a speed of 15 knots. The Standard Oil Company super-tankers now being constructed by the Newport News Shipbuilding and Dry Dock Company and the Sun Shipbuilding and Dry Dock Company are 615 feet long overall, 82 feet 6 inches beam, 42 feet 6 inches depth, operating at a loaded draft of 31 feet 11½ inches and at a speed of 16 knots. The vessels being constructed at the Welding Shipyards, Norfolk, Virginia, for the Oceanic Tankships, S. A., subsidiary of the National Bulk Carriers, are fifteen feet longer, with slightly more beam and depth. However, three even

(Continued on Page 134)

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the Port of Long Beach by RADAR





Above is an actual photograph of our radar viewing scope in operation. Compare the exact detail with the map of the same area shown on the left.

The equipment, product of the Sperry Gyroscope Company, has been installed by the port as an added service to its customers to prevent shipping delays.

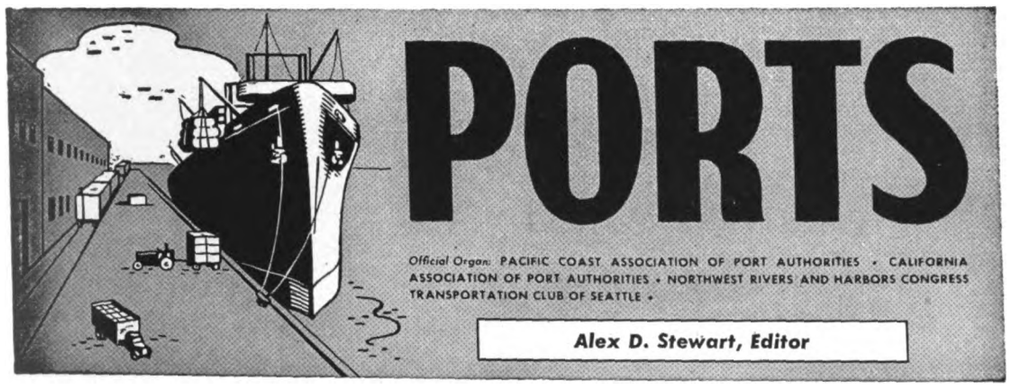
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BOARD OF HARBOR COMMISSIONERS
CITY OF LONG BEACH, CALIFORNIA

The Port of Long Beach

AMERICA'S MOST MODERN PORT ★ CALIFORNIA

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PORTS

Official Organ: PACIFIC COAST ASSOCIATION OF PORT AUTHORITIES • CALIFORNIA ASSOCIATION OF PORT AUTHORITIES • NORTHWEST RIVERS AND HARBORS CONGRESS TRANSPORTATION CLUB OF SEATTLE •

Alex D. Stewart, Editor

VISITING THE FUTURE WITH THE PORTS

It's in the news. Philadelphia sends good will emissary to Europe; San Antonio applies for foreign-trade zone; New York fights rate change; Pacific group acts to promote trade.

Seattle-Tacoma dedicate new international airport; Portland opens new modern lumber terminal; San Francisco hails first year of foreign trade zone a success; Oakland spends $4,000,000 for new construction; Los Angeles budgets $9,000,000 for new port facilities; new piers, sheds, tracks in vast Long Beach port expansion; New Orleans offers new challenge to U. S. ports; Houston threatens to become the nation's second largest port.

Such briefs are indicative of port planning. On the world wide front, ports are leagued together to gain objectives affecting their well being—fire protection, safety measures, the quieting of titles to tidelands and submerged areas. In general, they agree that world trade is important to the nation's and their own economy: that world trade is not a one-way road; that imports must about equal exports or there can be no world trade, and together they strive for that result.

On domestic fronts they do not always see eye to eye. Exemption of Panama Canal tolls for vessels in the intercoastal trade appears as a measure to encourage increased water commerce between Atlantic, Gulf and Pacific seaboards. However, there are shipping leaders who view with wary eye the proposal to exempt all domestic vessels, to include also those in the offshore trades. Their thinking is that to date, for rate making purposes, some locales have had a geographic advantage which will be lost if offshore vessels transit the canal free of tolls.

Some believe there is a natural gateway for every product and it is economically unsound to try to change it. That's a philosophy which many agree is not in keeping with the American spirit of competition. Houston, for example, maintains a solicitation office in New York. Baltimore operates with offices in New York and Pittsburg. Mighty New York has offices in Cleveland and Chicago. Fabulous New Orleans has a Washington office and trade emissaries traveling the length and breadth of the mid-West, to South America and elsewhere. Oakland is investigating a senatorial report that California grown cotton is being shipped from out of state ports owing to lack of warehouse space.

Frank Binswanger, a real estate man of Philadelphia, has been commissioned by that city to visit all Marshall Plan countries to interest them concerning Philadelphia as a trading center.

With a view to improving port practices at New Orleans the Louisiana Ports Survey Commission of four, created by the state legislature, visited Pacific Coast ports in May.

Business leaders of the Pacific Coast, representing steamship lines, railroads, ports and industry are organized into the Western Transportation Conference. They recognize that competition has been successful in diverting traffic heretofore considered logically theirs and study means to remedy the situation. Early studies indicate labor efficiency, land haulers absorption of handling and other terminal charges at competitive ports to a degree greater than extended to them, and sometimes the lack of storage facilities and efficient equipment are discriminatory situations which must be overcome. Efforts put forth by the Conference, and others, on the rail absorption matter have been abortive. A rail proposal to absorb and then impose a new arbitrary rate to cover brought dissent from many, including at least one railroad.

Pacific coastwise is in a slump. In May, 1949, only 10 vessels aggregating 51,700 deadweight tons, were operating on the coast, and only two of them, Liberty ships, in regular commercial service. Operating in June, on an initial voyage, was a converted LSM, owned by W. R. Chamberlin and Company, designed to carry packaged lumber between Oregon Coast and California ports. Success of that operation can result in other operators arranging similar movements.

The ICC is currently conducting hearings on West Coast port to port rail rates. Coastal ship lines contend a 50 per cent increase in rates has been granted railroads in the mountain-Pacific territory but they have not taken the full increase permitted upon many of the commodities which are water competitive and are maintaining low level non-compensatory port to port rates in order to freeze coastwise shipping out of the business. The Maritime Commission is supporting shipping men in that contention.

Boston is looking for business. Piers at East Boston owned by the Boston and Albany Railroad have been purchased by the Port of Boston Authority for $3,000,000. The agreement calls for the Authority to build a two-berth pier and modernize the grain handling facilities. The improvements are estimated to cost an additional $4,500,000.

New York

The plan of the Port of New York Authority for rehabilitation and operation of the municipally owned piers, originally estimated to cost $114,000,000, later revised to $91,000,000, has been rejected by the city, and it now appears the city will proceed with a program of their own planning.

In a rate move the Port of New York Authority has recommended that the entire rate structure to and from the Southwest be overhauled. The recommendation was made following a review of an ICC examiner's report which they contend is a serious rate discrimination against the New York, New Jersey port district. The report bears on domestic ocean-rail class freight. The Authority points out that the proposed increases would prevent Eastern manufacturers using the ocean-rail route as means of competing with central territory manufacturers in certain Southwestern markets.

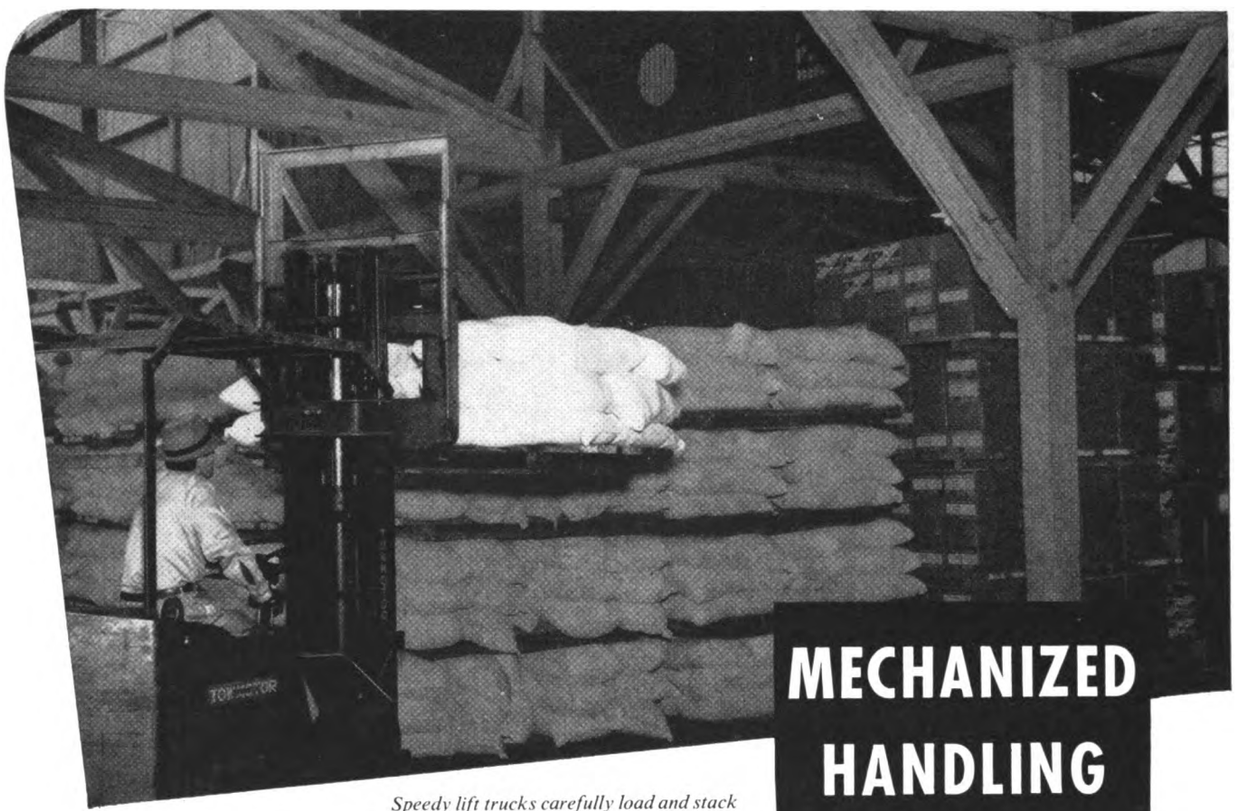
On the promotion side the co-ordinating committee for the promotion of the Port of New York is completing a program designed to encourage shippers to use the facilities at New York for their export cargo.

Houston

The starting line from which Houston plans to achieve the goal as second only to New York in the nation's port list is impressive. Feeding into the port are 15 major pipe line systems. Consistently a leading world cotton port civic leaders have not rested on that record and have stepped out to get some grain business. The port has 48 private terminals, 32 for hire, 80 in all. More than 65 steamship lines and 80 tanker lines offer service and call at Houston.

Trade envoys are busy on the sidewalks of New York and beating the bush in the hinterland and Houston backs them up with a program of constant improvement. Mapped out is a $22,000,000 expansion program which includes several new deep water piers, installation of a new modern bulk handling plant, an improved railroad system, and channel improvements. The Port of Houston is operated by the Navigation and Canal Commission, comprised of five members serving without pay, who are appointed, two by the city, two by the county, and the chairman by the city and county acting jointly.

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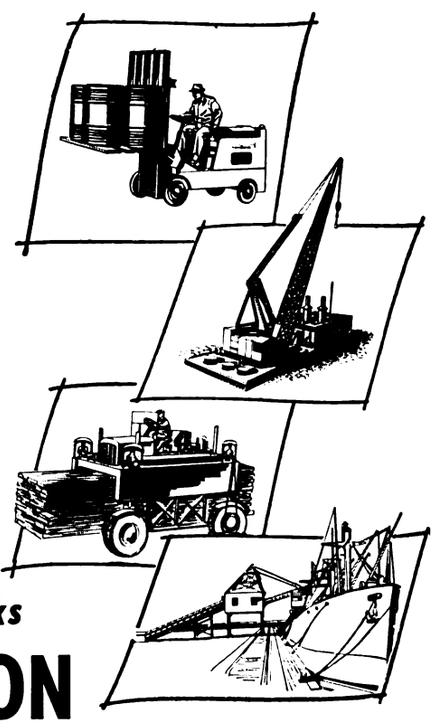
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New Orleans

West and East, North and South, wherever port planners meet, there is talk about New Orleans. Establishment of a foreign trade zone, an international trade mart, a group of fighting business men, all have had their effect in increasing foreign trade fivefold in dollar value. Based on the reports of the U. S. Department of Commerce, New Orleans reports a new all-time high for its port operation established by handling $1,276,500,000 worth of cargo in 1948, in the face of a 15.1 per cent drop for the nation. The report continues:

"At the same time, New Orleans' share of the nation's foreign trade rose from 8.3 per cent to 9.8 per cent for 1948. It remains the only port other than New York to handle more than a billion dollars of cargo a year."

At New Orleans, as at other ports, dollar volume of exports fell off in 1948, but not so much at New Orleans. The drop in exports, however, was offset by a gain of 17.3 per cent in imports, valued at $429,600,000 for the year.

Establishment of a Latin American Division by the Port of New Orleans has recently been announced. Managed by Rafael C. Goyeneche, the new division is tasked to intensify and coordinate all New Orleans contacts in Central and South America and mid-continent United States. Born in Cuba, Goyeneche graduated from American High School in Mexico City, and later attended Louisiana State University. Following service as an officer in the Latin American Division, U. S. Army, he completed his college career to later become director of international relations for the city of New Orleans.

Long Beach

Long Beach, to justify its claim as "America's Most Modern Port," is rapidly furthering its $100,000,000 development program. With revenues from oil wells to support it the program is one the area can afford. Probably the only debt-free port in the world more than $20,000,000 has already been invested and additional millions are currently being expended in piers and transit sheds, including a huge clear span transit shed measuring 1152x-200 feet.

An outstanding feature of all developments already installed and those planned for the future is the concrete and steel fire-resisting construction. For instance, in the construction of piers, "Monotube" steel piling, a hollow, fluted steel piling, is driven into the ground, filled with steel reinforced concrete and capped with concrete. Corrosion is counteracted by cathodic protection. Interlocking steel sheet pile bulkheading supports the earth fills and concrete wharf decks are standard throughout the new work. For port development alone, Long Beach has purchased 37,000 tons of steel worth $3,146,-000. To support the claim of "Most Modern Port," Long Beach lists a dozen or more distinct features which are standard in all their new structures.

A longshoremen's dispatch hall in Wilmington, property of the Port of Long Beach, was an innovation when dedicated in 1947. Another first for the enterprising port is the installation of a radar control system to serve as an aid to the pilotage of ships in and about the harbor.

Located in the outer harbor the radar scanner is mounted atop a 122-foot steel tower alongside the pilot station. By

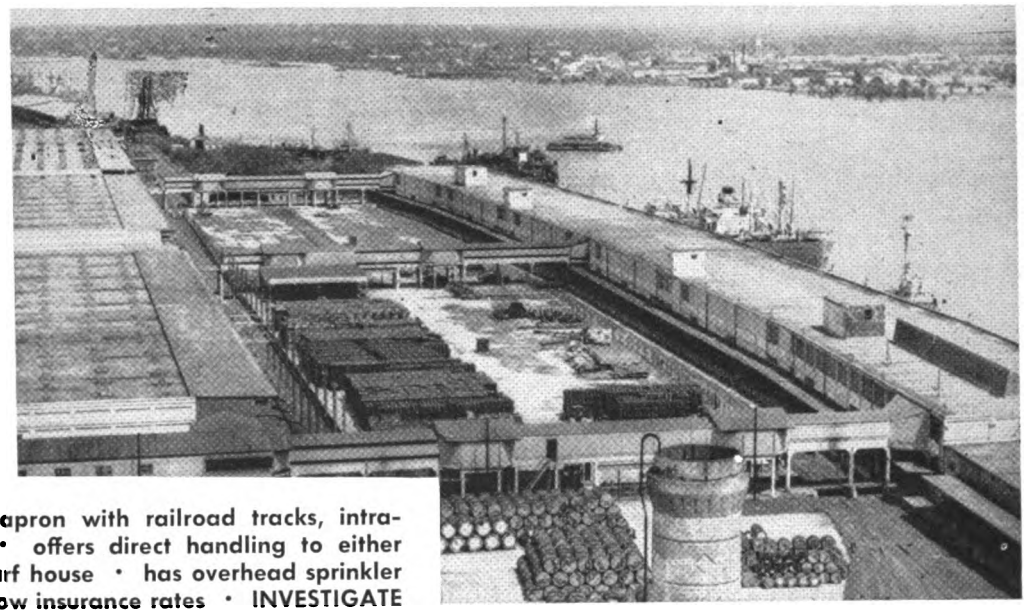
INTERNATIONAL TRADE MART—New Orlean's answer to competitive ports. New Orleans reports a new all-time high for its port operation established by handling $1,276,500,000 worth of cargo in 1948, in the face of a 15.1 per cent drop for the nation.



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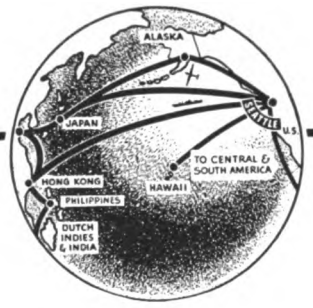
FOREIGN TRADE ZONE #2

Foreign Trade Zone No. 2 at the Port of New Orleans is a hospitable island where an importer can set his merchandise down while he makes up his mind what he wants to do with it—FREE FROM THE USUAL CUSTOMS REGULATIONS. The Zone provides commodity storage floor space of 300,000 square feet • is equipped with overhead cranes • is served by 1008-foot wharf, 45-foot wharf apron with railroad tracks, intra-plant railroad tracks • offers direct handling to either floor of the 2-story wharf house • has overhead sprinkler system bringing about low insurance rates • INVESTIGATE THE POSSIBILITIES.



Write Board of Commissioners, Port of New Orleans, (Grantee) No. 2 Canal Street, New Orleans, Louisiana.

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30 DOMESTIC AIRLINES.

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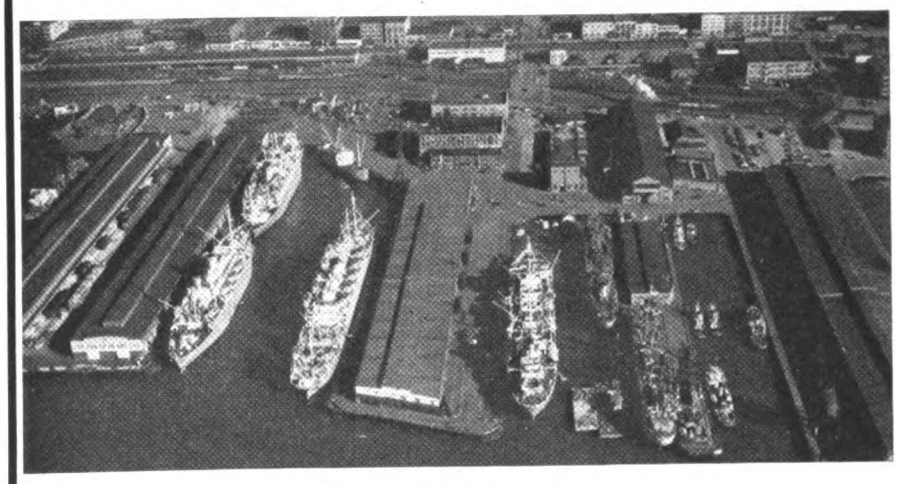
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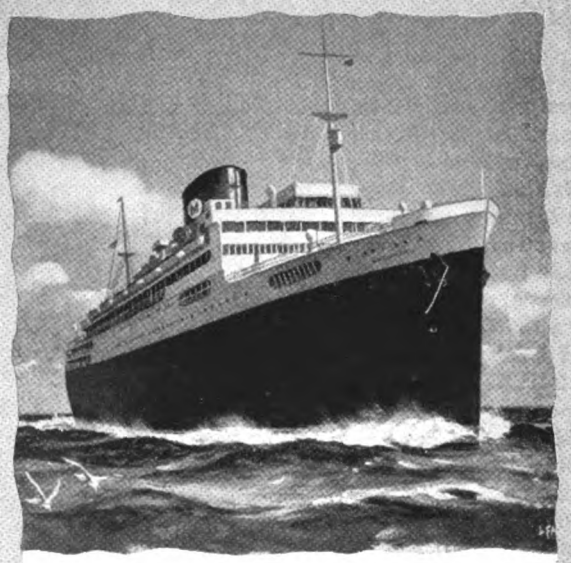
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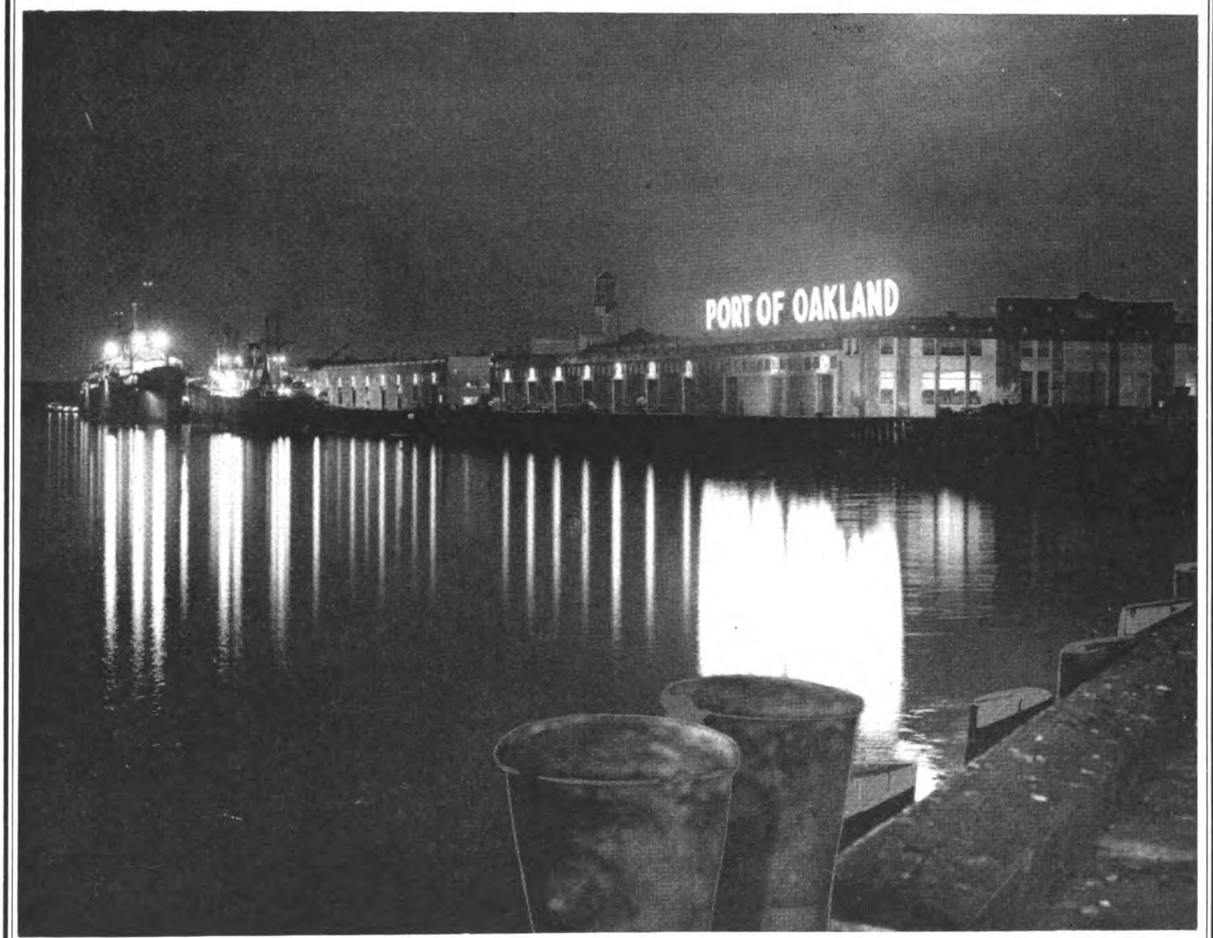
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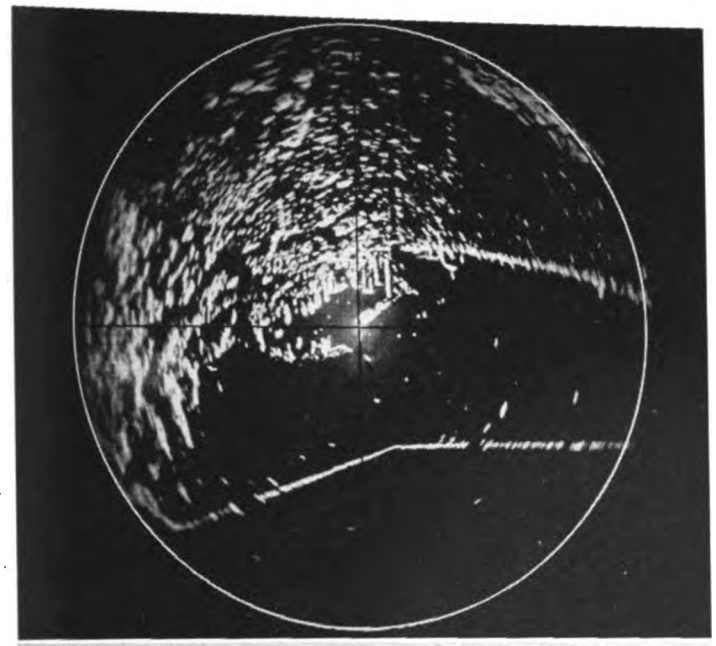
BOARD OF PORT COMMISSIONERS

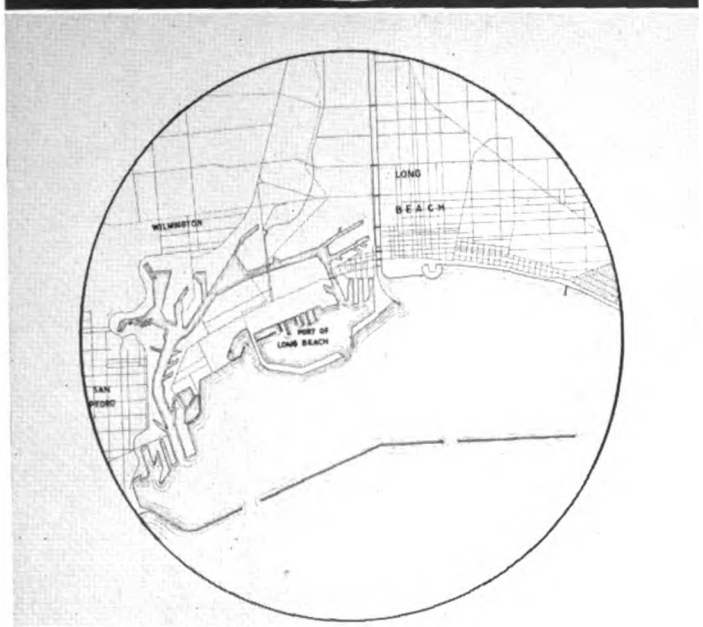
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Commissioners, DUDLEY W. FROST and JAMES F. GALLIANO—Port Manager, A. H. ABEL

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PORT OF LONG BEACH INSTALLS RADAR—An actual photograph above of the viewing scope of the Port of Long Beach radar station in operation. The photograph does not bring out the clarity as it actually exists on the scope. Below shows a map of the same area as that shown on the viewing scope, showing the exact detail with which the radar installation reproduces the surrounding area.

radar it is possible to locate all ships within a distance of 30 miles from the pilot station. The port pilots carry walkie-talkie radios as they board ship and are in direct contact with the pilot station at all times. The pilot boats also carry transmitter-receiver sets to result in complete radio contact being maintained between the dispatcher in the pilot station, the pilot boats and the pilots. The installation is being made by the Port of Long Beach as a service to shippers and there will be no charge for its use. The procedure is to track down vessels from the time they are first picked up in the scope until they are berthed and with the use of the walkie-talkie to assist in guiding them safely in foul weather, avoid standby time for stevedore gangs, and in various ways to eliminate vessel delays. The first port radar control system in the western hemisphere may prove that similar installations are an integral and necessary adjunct of any modern port. The Long Beach equipment was furnished by Sperry Gyroscope Company.

Los Angeles

Long range engineering, plus $100,000,000 of city and federal funds, has given Los Angeles a deep water harbor "planned and built for shipping." This year those millions are to be augmented by nine million expended for construction projects including $5,800,000 for a passenger and cargo terminal consisting of a wharf 1,400 feet long, two transit sheds, one 567 feet by 120 feet and the other 546 by 160 feet. Other betterments are an apron wharf and transit sheds, $2,458,000; wholesale fish market building, $450,000; new incinerator plant, $250,000; paving, and installations required for establishment of foreign trade zone.

Dedication of the Los Angeles Foreign Trade Zone is slated to take place in August or September. Capital investment for the zone will be $209,679 for the first year. Port officials have announced the zone is expected to become self-supporting by the eighth year. For the first three years of operation a ground area of 5.24 acres and a water area of 1.17 acres has been set aside. In the space reserved for the first year of operation approximately 100,000 tons of cargo can be handled. All commerce through the port in 1948 is noted in the annual report of the Board of Harbor Commissioners at 17,988,872 short tons.

San Francisco

San Francisco has compiled and published a 60-page book supplying facts, figures, description and information on their Foreign Trade Zone No. 3. Officially established on June 10, 1948, the book contains a statement that loading and storage operations have shown a profit, but not enough to balance the expenditures for guard's salaries and advertising. The statement continues: "The zone is not losing as much as was expected and its early success is surprising everyone."

Cited are many examples of odd uses made of the facility. Listed are 187 commodities handled in the zone since its inception. Handled to April 30 were 262 lots, totaling 9,472 tons, valued at $2,718,007. Duty and internal revenue tax collected on goods imported from the zone totaled $123,409.

Promotion-minded Robert H. Wylie, port manager of the Port of San Francisco, has said: "The continuing demonstration of ability to provide service is the aim of our port. We are making a realistic approach to the problem. A new sharpened sense of service, an eagerness to demonstrate to the world that its fine physical facilities, efficient labor force and a complete array of management "know how," are now combined in a team equipped to provide service second to none. San Francisco will become the favorite port of new shippers only if the shipper finds real service, efficiency and certainty in moving his goods safely and quickly. This must be demonstrated, not once, but consistently. San Francisco's ability and eagerness to provide real service is evidenced by the host of existing facilities and services which have always attracted shippers to the port. In addition, new developments are in progress.

"First, the physical facilities of the port are being added to and improved continuously. Mission Rock Terminal, providing berthing space for eight ships, will be completed in 1950 at a cost of nearly $6,000,000 and will be the Pacific Coast's largest and most modern terminal. Islais Creek Grain Terminal is under construction and will provide automatic handling and store for 500,000 bushels of bulk grain. Pier 27, no longer adaptable to provide adequate service, is being removed."

Oakland

Along Oakland's 16 miles of waterfront are 85 terminals and a host of other industrial and harbor facilities. In 1948 the Port of Oakland spent nearly $4,000,000 for construction. Part of this was for dredging in connection with filling of approximately 200 acres of marshland in the San Leandro Bay area where it is planned a total of 950 acres will eventually be reclaimed and a shipping terminal with berths for 28 ocean vessels will be built.

Construction of a new maritime union hiring hall has been completed for the Port of Oakland. The hall was built by the port under a lease agreement with the Waterfront Employers Association and ILWU No. 10. Planned as a service to shippers expectations are that substantially lower costs will accrue to marine shipping activities. Hereafter maritime workers needed in the East Bay will be dispatched from the new hall instead of from San Francisco.

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LOS ANGELES HARBOR AWARDED FOREIGN TRADE ZONE NO. 4

Watch for Opening



Port of Los Angeles is the world's greatest man-made harbor including these outstanding service facilities...

115 steam ship lines connect the Port of Los Angeles with other world ports. 200 motor truck carriers connect ships to every American community.

Elbow room to work 35 ocean liners simultaneously.

All terminals permit simultaneous handling of your cargo to or from ship by railroad cars or motor trucks.

477,550 sq. ft. floor space in a reinforced concrete warehouse to meet your storage needs.

3 floating dry docks, up to 18,000 tons capacity, available for ship repair.

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The Port That Was Planned and Built for Shipping

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PORT OF OAKLAND—Outer Harbor Terminal faces San Francisco Bay and the Golden Gate. This aerial photo shows the mainland railroads pass the outer harbor area.

Another somewhat different service to the industry is the cooperative arrangement between the city, the fire department and the port board for the maintenance and operation of an additional fireboat. Secured by the board from the U. S. Navy a 99-foot vessel, named the PORT OF OAKLAND, is activated by the fire department. The ship's usefulness was outstandingly demonstrated at an Army base fire in March. As a result of that experience, and for greater usefulness, the harbor board has arranged to increase pumping capacity from 4,000 to 10,000 gallons per minute. The fireboat berth and firehouse used for crew quarters is also owned and maintained by the port board.

Engineered and managed under the guidance of the port board, Oakland's municipal airport is rated as among the finest in the world. A recent CAA announcement places the airport as third in the nation during 1948 for total landings and takeoffs of aircraft among 25 leading transport airports of the United States. In 1948 air carrier operations increased 30 per cent over 1947. As a consequence plans for a new passenger terminal building are being drawn, a drafting station to provide an auxiliary supply of water for fire fighting purposes has been built, and runway and traffic control facilities are being expanded.

Stockton

"California's Inland Seaport," the Port of Stockton, situated in the center of the San Joaquin delta in the heart of the nation's fourth richest agricultural producing area, has embarked on an intensified program of solicitation. Sales offices are established in Fresno and San Francisco. Growers, canners, shippers in the hinterland are being supplied with rate data and otherwise advised of advantages of routing shipments via Stockton. On the management side the port is seeking an adjustment with steamship conferences of requirements to be met before a ship will call at Stockton, and working to gain approval of federal agencies for channel and turning basin betterments.

Portland

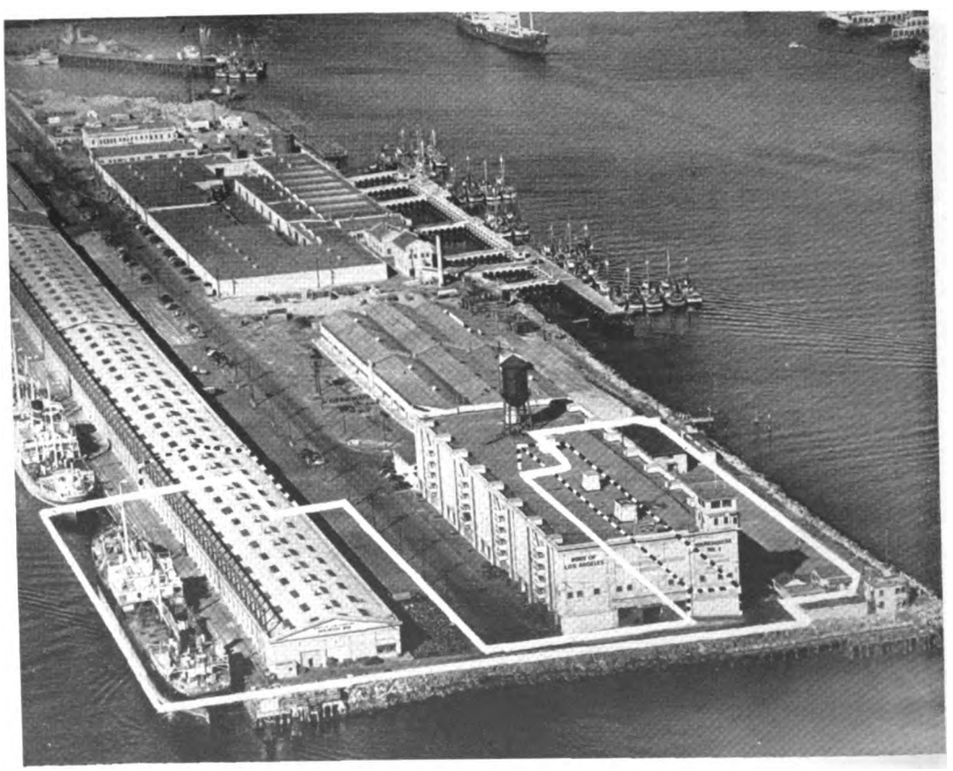
Portland, Oregon, views the future with one eye on the vast Inland Empire of the Columbia River basin, the other on the fertile bottom lands and timbered hills of the Willamette valley and proceeds with Commission of Public Docks construction of a new lumber terminal and additions and betterments to all public owned terminal properties.

At mid-year the new lumber terminal was 60 per cent completed with one section in use. Inclusive of the pile supported pier the entire area comprises 22½ acres. Berthing space for ships on a 1100 foot harbor face and one ship in a slant slip 500 feet long is provided. Revised plans include erection of two modern transit sheds, each 550 feet by 180 feet. Incorporated into shed and pier design are foundation features to permit installation of gantry cranes at a later date, Tail gate delivery platforms extend the entire length of the terminal. Cost of the completed terminal approximates $3,000,000. Small mills on the Willamette and elsewhere depending on trucks for delivery to shipyards are already moving a considerable amount of their cut to the pier.

To better service and accommodate bulk cargoes the dock commission's bulk loading facilities have been overhauled and improved by installation of a portable conveyor system for stock piling and reverse, complete repair of the 12,000 ton capacity bunkers, placing into operation of an automatic Haiss loader with capacity of 600 tons an hour to the belt, and construction of new modern 500 foot long oil dock for exclusive use of tankers.

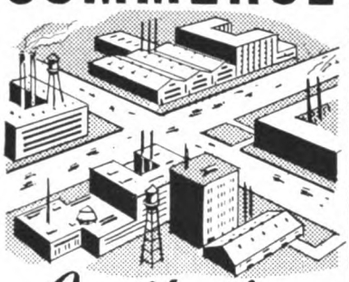
Under negotiation is purchase by the Commission from War Assets Administration of 37 acres of central waterfront property. On the property are two finger piers, seven whirley cranes, shipways and buildings. Plans for a new general office building to house the commission staff and shipping companies seeking office space on the waterfront are being held in

LOS ANGELES HARBOR FOREIGN TRADE ZONE—Municipal Warehouse is the site of the trade zone. Also shown in this view is the marine lookout station and harbor pilot station.

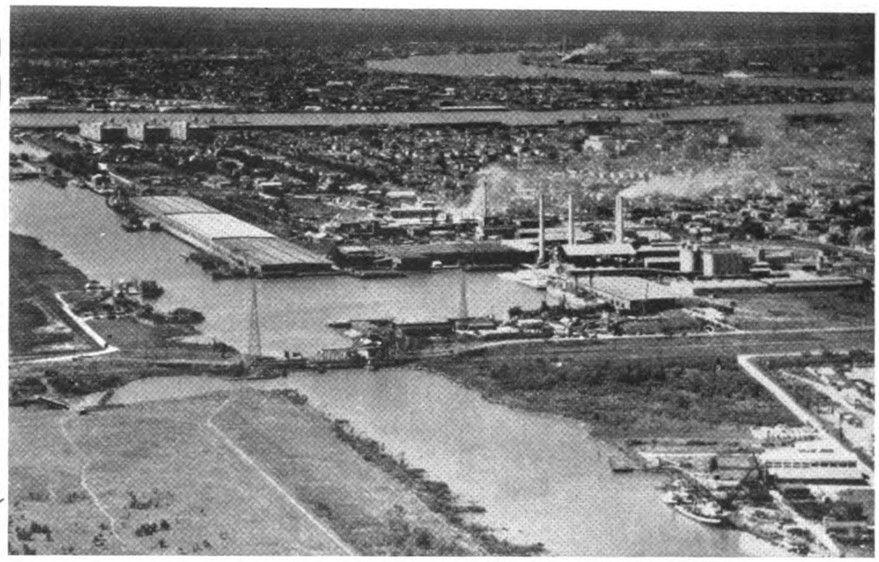


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CROSSROADS of COMMERCE



Invitation to Industry

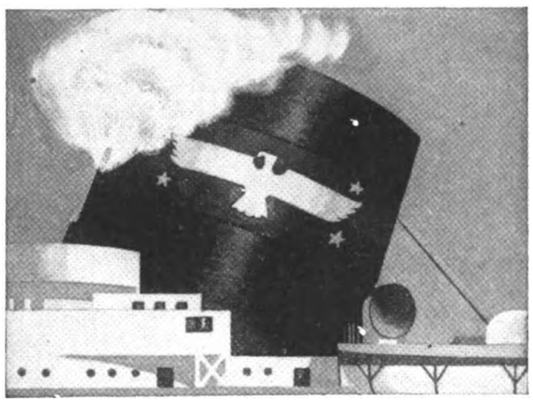


The Inner-Harbor Navigation Canal—owned by the Board of Commissioners of the Port of New Orleans—is dedicated to industrial development. The Inner-Harbor Navigation **Canal connects the Mississippi River with Lake Pontchartrain and is part of the Intracoastal Waterway system. On its 11 miles of shoreline, are located 35 industries. All types of industries are invited to see these** facilities. The rental rates are from $300 to $800 per acre. Rail, water, power, gas, sewerage and employee transportation are available. Locate in New Orleans at the **crossroads of commerce and industrial development.**

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SEATTLE-TACOMA INTERNATIONAL AIRPORT—The new $3,000,000 Administration Building.

abeyance pending outcome of these negotiations.

Tacoma

On the Puget Sound, Tacoma is capitalizing on gains made during the period last fall when that port was loading ships at a time when all other major Pacific ports were strikebound. Shippers who used Tacoma during that time possibly formed the habit. Coast experience is said to be another determining factor. A current rumor is that a new shipping line for the Alaska route is planned with Tacoma being used as the southern terminus.

Encouraged by the current and 1948 experience and tonnage potentialities resulting from improvement and lease and sale of tideland industrial properties to firms producing and requiring articles moving to and from foreign markets Tacoma business men are launched on a promotion program starting with distribution of a brochure titled "Maritime Tacoma."

Improvement of terminal facilities at Tacoma include complete rebuilding of the Port of Tacoma owned open storage pier at a cost of $350,000 and an addition of 1,000,000 cubic feet to the capacity of the port owned cold storage plant at a cost of $650,000.

Seattle

On July 9, the Seattle-Tacoma International airport, situated 12 miles south of Seattle and 19 miles north of Tacoma, was formally dedicated. In use for many months formal dedication awaited completion of the new $3,000,000 administration building.

The airport covers 900 acres. The site was selected by CAA and purchased by the Port of Seattle for $660,000 with the help of a grant of $100,000 from the Port of Tacoma, city of Tacoma and Pierce County, Washington. Today it is an $11,000,000 investment.

Engineering for the airport, including administration design by the Port of Seattle engineering staff under the supervision of Chief Engineer George T. Treadwell. General layout of the administration building is convex, comprising a six floor center section flanked by three story north and south wings both at an angle of 22½ degrees. An open observation deck runs along the entire field side face.

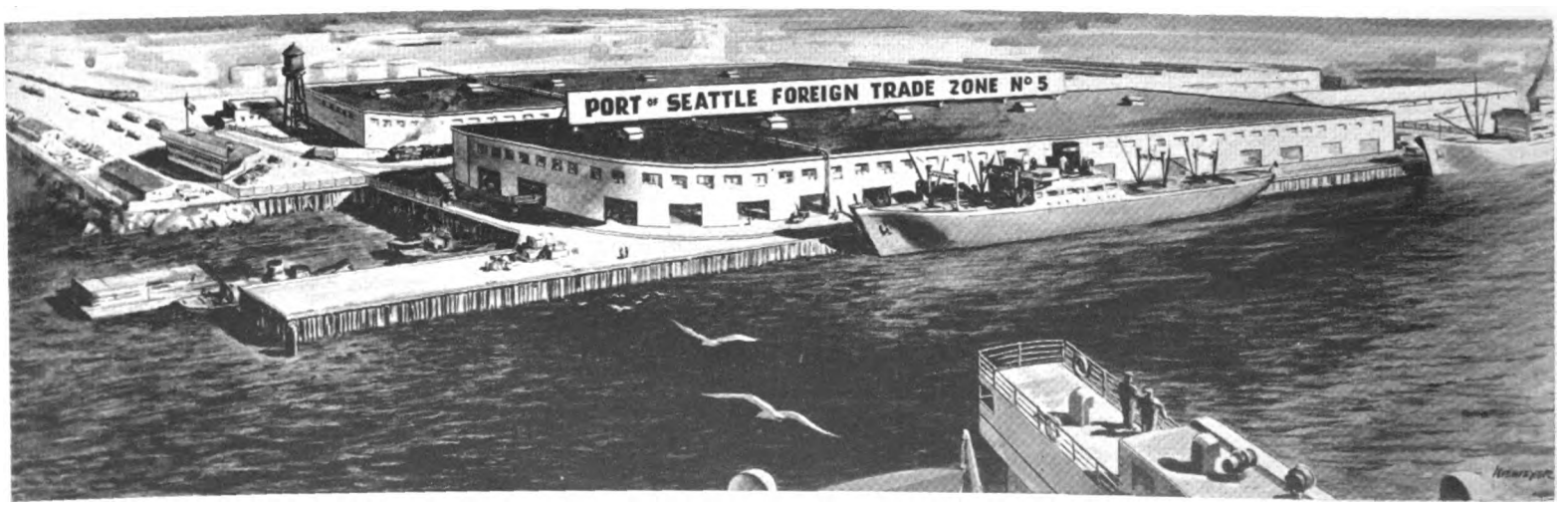
Every conceivable nicety for convenience of patrons, passenger and traffic flow has entered into the planning. The aprons have eight plane spotting positions, each 150 feet in diameter, served by eight loading gates. Space is available for eight additional positions. An underground garage totaling 23,833 square feet in area incorporates a fully equipped service station. Here the round trip passenger may leave his car in protected storage and pick it up, gassed, greased and washed, on his return. There is also surface parking area for 620 cars.

By September, Foreign Trade Zone No. 5 is expected to be in operation at Seattle. Berthing space 1,479 feet in length and a total covered floor area of 165,436 square feet with capacity calculated for 10,000 tons has been set aside at the Port owned East Waterway terminal to initiate the operation. A grant of $100,000 to help defray expenses for the next biennium has been authorized by the state of Washington legislature.

In payrolls, products and services the fishing industry is a $60,000,000 business at Seattle. The Salmon Bay terminal of the port caters to the fishing fleet. Visions of early planners have been overshot. Piece meal expansion has followed. Capacity has mushroomed to 450 vessels, but that is not enough. Business houses caring for fishing industry needs have moved in. Others seek space. Additional and improved marine ways to provide handy drydocking and ship repairs are in demand. Currently underway are improvements to cost $1,750,000. Capacity is to be increased to 1,000 vessels. New piers, new net sheds, improved roadways, are all a part of the plan to completely rebuild and expand the haven.

As soon as possible after the "must" items are completed fish landing and processing facilities, a large marine exhibit, restaurant and public service center are possibilities. First and foremost the terminal is a service center for the fishing fleet. Civic entrepreneurs consider it can also become a tourist attraction and a boon to increased interest in waterborne commerce by locals and tourists as well.

FOREIGN TRADE ZONE NO. 5—which the Port of Seattle hopes will be in operation by September.



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Hillcone Steamship Company

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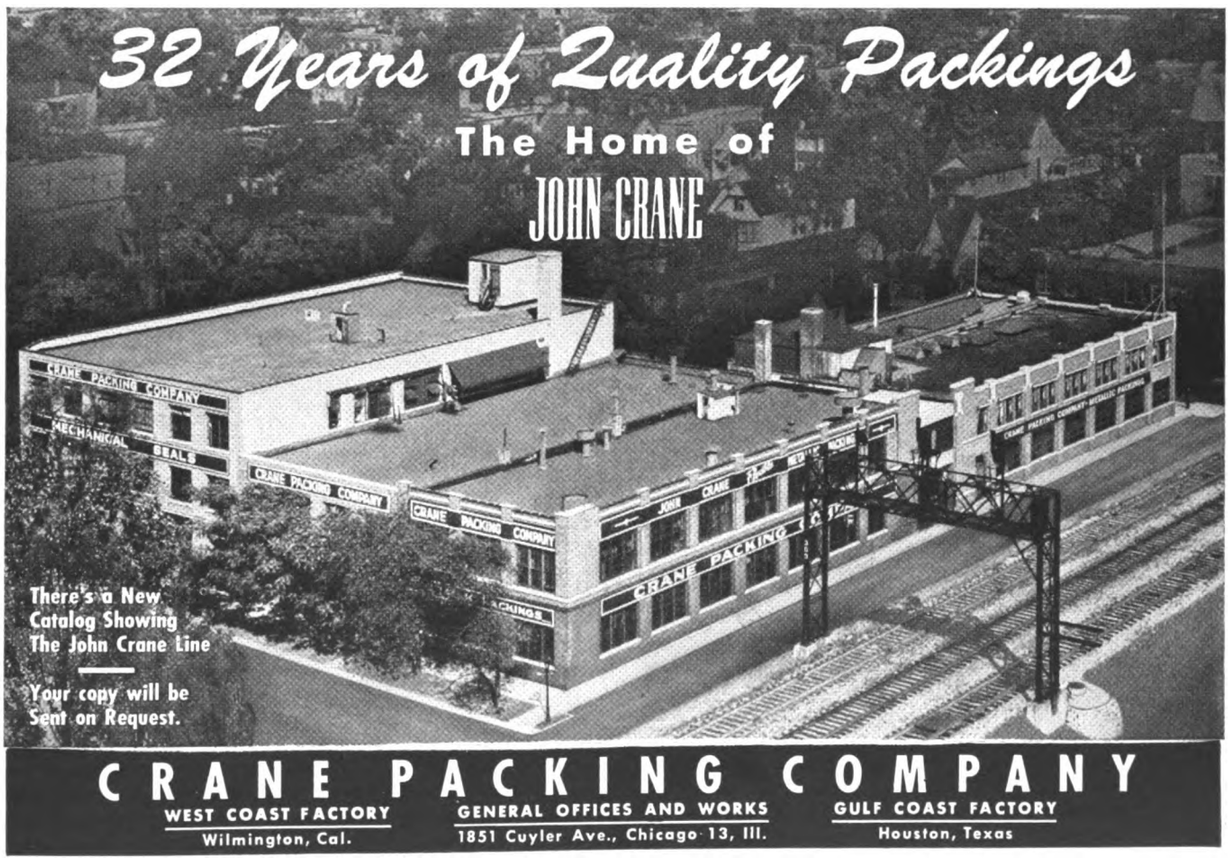
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SHIPS, SHIPS AND SHIPS

LOG REPORT ON THE RESERVE FLEET

Analysis of the present make-up of the reserve fleet and a U.S.M.C. report on the present scope of preservation work.

A LOG SURVEY

As will be noted from the accompanying table and chart, the size and composition of the United States Maritime Commission laid-up fleet, including war-built merchant vessels and a comparatively small number of prewar built vessels, has fluctuated considerably since the end of the war. This has been due primarily to the sale of vessels to American and foreign shipping interests under the authority of the Merchant Ship Sales Act of 1946, and to the varying demand for tonnage on a bareboat charter basis.

While there were only 330 vessels laid-up shortly after the war, January 1, 1946, the number gradually increased during the next twelve months so that on January 1, 1947, there were 1,738 idle. During the next seven months the total laid-up dropped to 1,182 due to the demand for bareboat chartered tonnage by American shipping interests for operation in the foreign trades and an accelerated rate of sales of vessels. However, beginning in August, 1947, the number of vessels in the laid-up fleets increased month by month until January, 1949, when there were 1,966 vessels immobilized. This was due to the cancelling of charters of many bareboat chartered vessels because of a continuing decline in shipments via American flag ships brought about principally by increasing competition from foreign flag tonnage, as the maritime nations of the world completed the assembling of their new postwar fleets, and the fact that the amount of cargo offered in the waterborne commerce of the United States declined, both imports and exports. Some improvement in the demand for tonnage resulted shortly after the first of the year in a slight drop in the month to month total of ships laid-up, so that on May 1 there were 1,930 vessels idle.

The greatest number of any one type of vessel in the laid-up fleet sites at all times has been the standard Liberty cargo ship, of which the Maritime Commission constructed 2,580. On May 1, 1949, there were 1,332 of these ships idle. Although there were 221 T2 type turbo-electric drive tankers in lay-up at one time, none are now at the laid-up fleet sites, all available for sale, excluding those under military control, having been disposed of to American and foreign interests.

Early in 1948 the Maritime Commission endeavored to secure an appropriation from Congress of approximately $165,970,000 with which to initiate a huge repair program on 910 of the vessels in the laid-up fleet, contending that many of the vessels had been returned from war service by the military forces and the merchant marine without effecting necessary repairs and only preservation work had been performed. The Commission pointed out that international developments made it practically mandatory to restore this number of vessels to immediate operating condition, but the Bureau of the Budget subsequently ruled that the projected emergency program was of insufficient priority to warrant its undertaking.

Following this a joint effort was made by the Maritime Commission, the Army and Navy to secure funds to recondition a lesser number, 258, principally troop ships and naval auxiliaries, all owned by the Maritime Commission. This represented a group of high class ships that should be repaired inasmuch as they would be absolutely necessary immediately in any future national emergency. The armed services believe this minimum number of 258 ships in the laid-up fleet

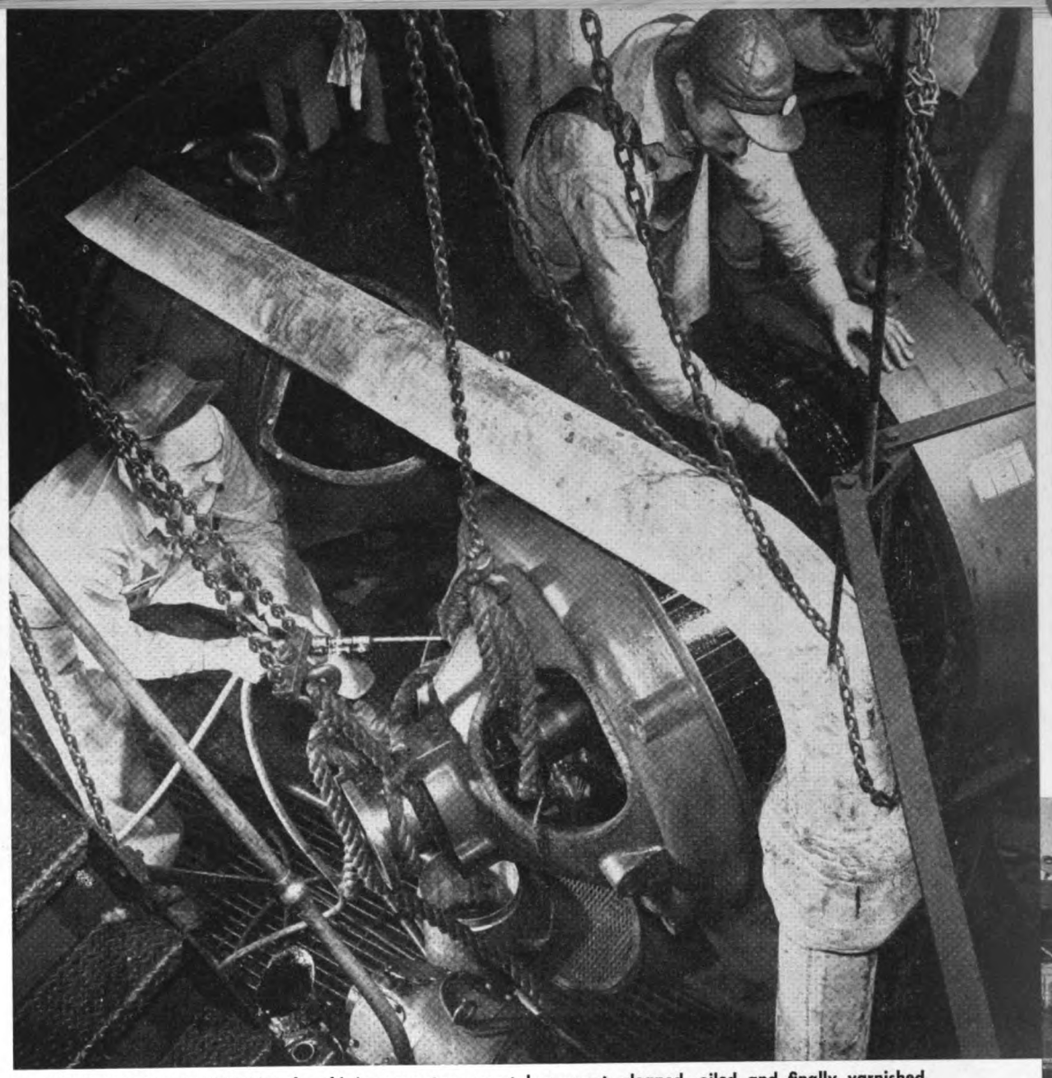
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should be repaired, particularly as to propulsion machinery and electrical equipment, and hull repairs. No action has been taken on this project to date. This would seem to be worthy of immediate consideration in the national interest, at the same time providing much needed work for the repair yards which are now operating at a rather low ebb. It is important that our ship repair and shipbuilding facilities, together with personnel, be kept in good operating condition. In its original request for funds for the repairing of the original 910 vessels, the Maritime Commission had estimated that the average repairs to each ship would amount to about $182,000, averaging about nine and two-thirds dry dock days.

In a more recent move the Maritime Commission endeavored to secure the allocation of several idle Navy dry docks with the intention of locating one at each major lay-up site for use in bottom preservation work by government personnel. This move, however, was opposed in the course of public hearings by the shipbuilding and repair industry, who contended that if the Commission did operate dry docks for bottom preservation it would naturally lead to repair work being undertaken while the vessels were in dock, and all of this preservation work could be handled at a lower cost at repair yards. The Commission denied it intended to undertake bottom repairs, and stated the preservation work could be done with government facilities and personnel at a saving of nearly $50,000,000 over a period of twenty years, including some $30,000,000 in charges for towing vessels between the reserve fleet sites and repair yards.

Discussion of the issue drew widespread interest with the result that on March 9, during a recess in the public hearings, the Commission was approached by the Dow Chemical Company with a proposal to effect preservation work on the vessel bottoms by the cathodic method at much less cost than dry docking the ships and doing the work mechanically. As a result of this unexpected development, the Maritime Commission announced that it proposed to make tests, during the next six to eight months, to determine the economy and efficiency of the cathodic method.

Through this method the preservation of ship bottoms without scaling can be accomplished by connecting groups of vessels electrically as cathodes and suspending magnesium alloy annodes in the water between and around them. It is estimated this method would cost $680 per vessel per year, compared to $1,450 by dry docking, scaling and painting, using government facilities and personnel, or $2,400 if the work were done commercially. All vessels delivered to the fleets have had primary protective measures applied, including mooring, draining and the application of preservation compound to exposed working parts. Final preservation measures, averaging 60 percent of completion, have been accomplished on all permanent reserve types of vessels and on the better type of ships which have been in the fleets a sufficient length of time to make such action necessary to prevent deterioration.

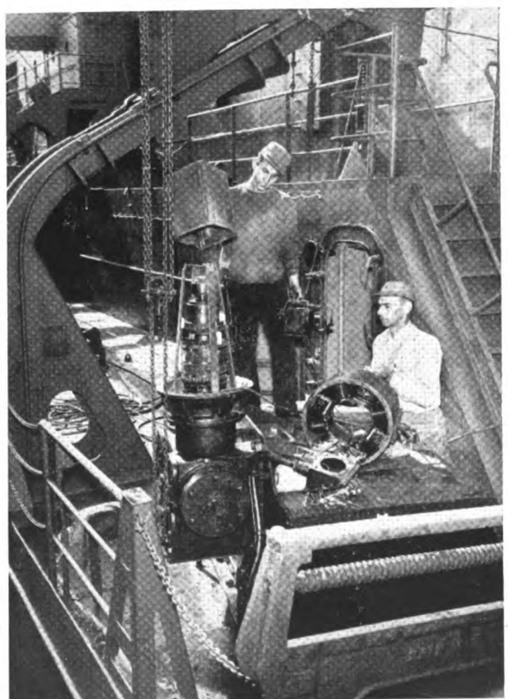


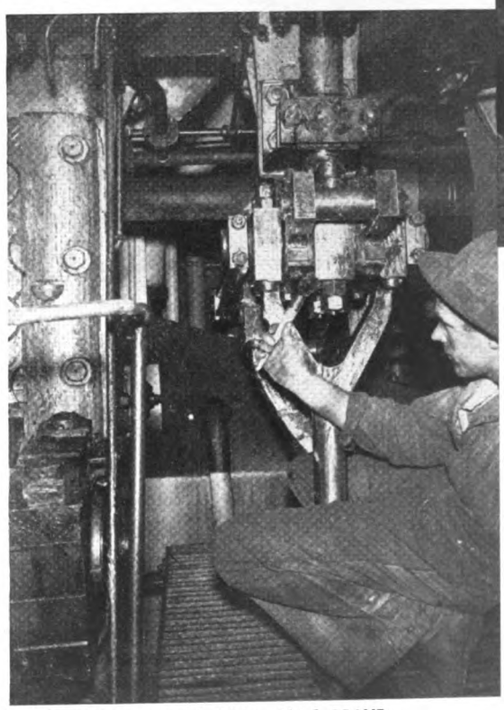
TO MAKE READY FOR SERVICE, the ship's generators are taken apart, cleaned, oiled and finally varnished.

U.S.M.C. REPORT

Methods

Immediately after World War I an attempt was made to preserve laid-up





BOAT WINCH MOTOR dried out by use of electrical strip heaters, left. Maintenance Electrician Chief GRAVELY taking a mega reading of the motor while his helper holds the meter and removes the tin cover which kept heat in. Reassembling and preservation follows.

PAINTING the piston rods with heavy grease for preservation, right.

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vessels in the manner that ships are maintained under operation, but this method proved excessively costly and cheaper means had to be found. The solution was found in the development of a preservative compound, comprised principally of oils, which when applied to the machinery and the structures of vessels (except underwater hulls), had the effect of loosening existing rust and scale, preventing further corrosion, remaining active for a long period of time, and constituting no obstacle to the ready reactivation of any vessel to which it was applied. This compound was developed in 1927, and its use between that time and 1940 conclusively demonstrated it would accomplish the desired results. Among the most important advantages of this compound are simplicity of application and comparatively low cost.

In the current vessel preservation program the compound is applied to all exterior and interior metal surfaces of the superstructures and hulls (except underwater) and is pumped through the boilers, machinery, and pipe lines of the vessels. It is not applied to electrical installations such as generators, motors and controls. These are cleaned thoroughly and their insulation treated with an insulating varnish containing a fungicide which effectively destroys fungi and inhibits new development.

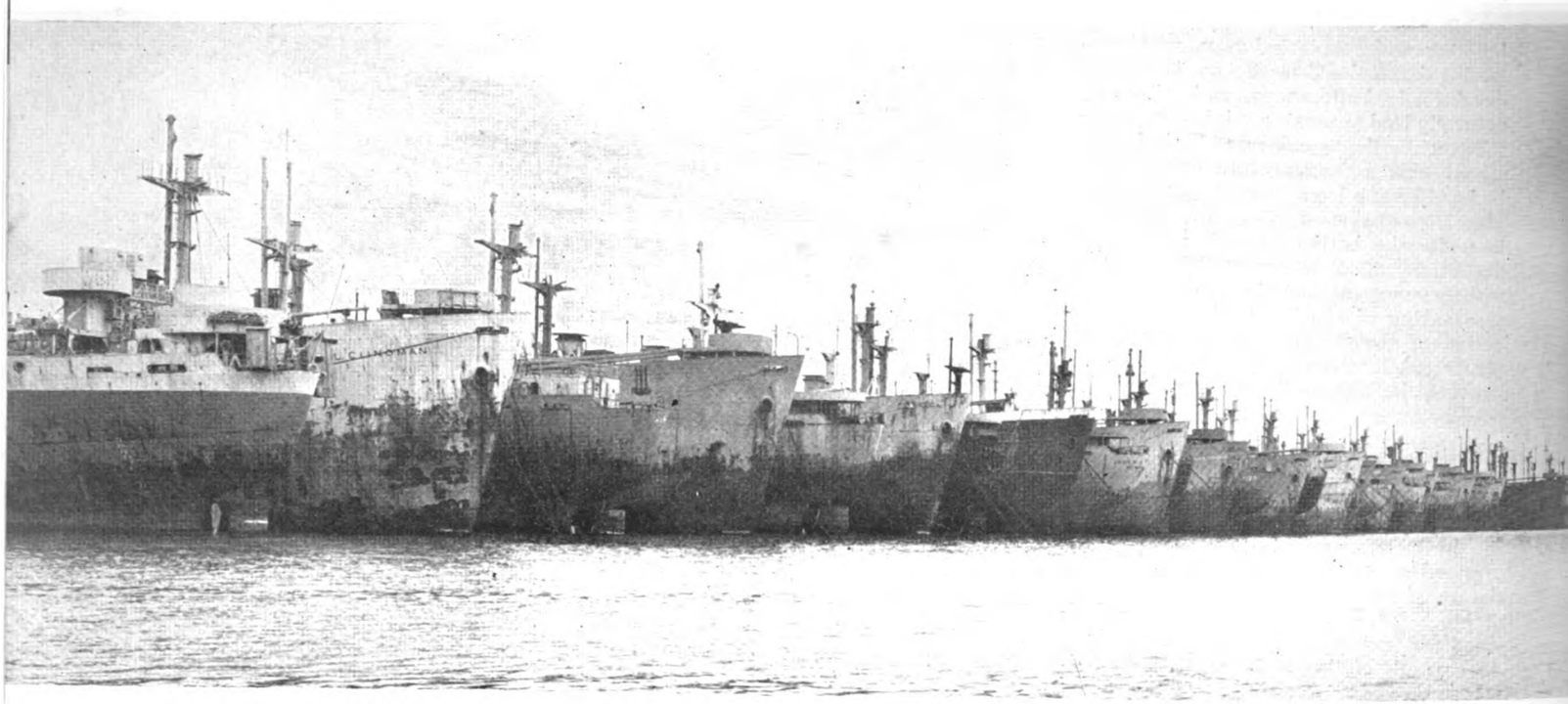
Shortly after VJ-Day the Commission estimated that it could receive the average vessel at a reserve fleet site and completely lay-up and preserve it at a cost of about $8,000 for direct labor and materials. At that time there appeared to be some skepticism as to whether or not the work could be performed at so low a figure. Despite the fact that wage rates for personnel engaged at the fleet sites have risen about 30 per cent since the end of hostilities (as has been the case in the national wage structure) the Commission is still accomplishing the full preservation of vessels for $8,000. This has been possible because of labor saving techniques developed by the Commission during the past three years and applied on what may be described as a mass production basis.

When all of the vessels have been received in the permanent fleets and have been fully laid-up, it will require an average annual expenditure of about $2,000 a vessel, at present wage and material levels, to maintain them over a long period of years (exclusive of the cost of preserving the bottoms). It was originally anticipated this annual cost would be about $1,100, but the Commission has found no means as yet to offset the wage and material increases that have taken place. This yearly maintenance figure covers expenses for fleet tugs, administration, security patrol, transportation of personnel in the fleet areas, retreating the hulls every two and one-half years, retreating the machinery every four years, turning over the engines and other machinery twice a year, pumping seepage out of the vessels, upkeep of hatch coverings, replacement of fenders and gangways, and replacement of stack covers.

This low-cost lay-up and preservation program was put into effect despite pressures, recommendations, and miscellaneous suggestions that were constantly urged upon the Commission during the first two years of activation of the present fleets. When the total cost of $46,000 for laying-up a vessel and maintaining it in sound condition for 20 years (exclusive of bottom preservation) is considered in relation to its original construction cost, there can be no question about the economy of the program. Moreover, if these vessels had to be replaced during an emergency, new construction would not only be costly, but would require huge portions of the nation's manpower and materials when such would be urgently needed elsewhere. Therefore, any controversy over or tampering with a sound program for bottom preservation, which might nullify the effectiveness and economies applied to all other parts of the vessels, should be regarded with grave concern by those directly concerned with the national welfare.

Effectiveness

At the expense of repetition, it is emphasized that the preservation program described is effective. This statement is based not on theory but on actual experience. The vessels undergoing preservation at present are available for inspection by any interested officials; in fact, the Commission welcomes such inspection. This statement is made lest there be any feeling that the economy of the program is obtained through lack of quality.



A FEW of the many Liberty ships.

Simplicity of Reactivation

Of the several possible methods of laying-up and preserving vessels, that employed by the Commission is deemed to be not only the simplest of accomplishment but also to result in the most speedy, simple and economical job at any time these vessels might be urgently required for quick reactivation. Based on actual test conducted by the Commission at one of its reserve fleets, all of the preservation compound can be easily removed from the boilers, machinery and steam system of a vessel in less than 48 hours and at a cost of less than $2,500. The compound applied to all other surfaces of the vessel can be easily removed if desired, but actually need not be removed, inasmuch as coatings of paint applied over it will be perfectly sound and to some degree

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improved by the fact that the compound is present. Other types of preservation procedures result in expenses and time necessary for reactivation many times greater than the Commission's method.

Bottom Preservation of Vessels in the Reserve Fleets

Necessity

The most vulnerable part of a merchant ship in lay-up is the exterior bottom of the vessel, particularly its plates, rivets and welding along the sections at the water line. This, it is believed, is a statement to which experienced parties will take no exception. Records of vessels of the old laid-up fleets and of operating vessels provide ample proof thereof. Due to the fact that little or no bottom preservation was accomplished on vessels in the old laid-up fleets, many had to be scrapped in the late 1930's because of bottom deterioration. It is a matter of record that one such vessel disposed of as scrap had its bottom drop out and it sank almost immediately while being towed at sea. The Commission feels, therefore, that while its present program of preservation is sound and effective, an equally sound bottom preservation program should not be delayed.

Present Conditions of Bottoms

At present there are some 1,900 vessels in the reserve fleets which will comprise the majority of the ultimate number of vessels in permanent reserve. Five hundred eighty-eight of these vessels have been in the fleets for two years or more, 711 have been in one and one-half years or more and the remainder are of more recent arrival. It is known that those vessels that have been in the fleets more than a year and a half had not been drydocked for bottom treatment on an average of about one and one-half years prior to their entry into the fleets. One thousand four hundred and thirty vessels have not been drydocked in over four years.

Test plates and water analyses demonstrate clearly that bottom preservation is positively necessary at each permanent reserve fleet site. Steel plates identical to those forming the sides and bottoms of vessels, which were suspended at the water line and at various depths beneath the surface, show clear evidence of corrosion resulting from contamination by marine life and the action of air and water.

Specifications

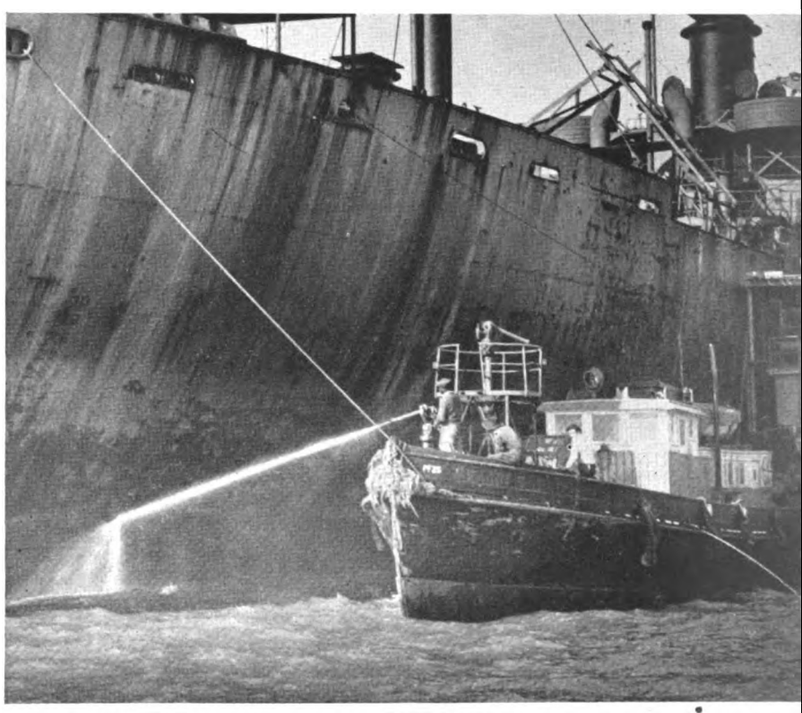
Having established to its satisfaction that bottom preservation of hulls at all permanent sites is an unavoidable necessity, the Commission has also been conducting tests of some 25 kinds of bottom coatings recommended by nationally known manufacturers in addition to Government specification paints. These tests have been carried on for nearly two years through application of the recommended coatings on test plates which have been immersed at various depths at each fleet site. Some of the recommended coatings broke down in less than a year, and corrosion took place promptly where the coatings did not stand up. On the basis of the tests thus far, it appears that the vinyl resin coatings of some of the manufacturers will provide the best and longest protection. This type of coating is a comparatively recent development of the paint industry, and it has not been tested over a long period of years. However, the results of Commission tests indicate that the best of this type coating will provide satisfactory bottom protection for a period of six years. This may vary somewhat between the several fleets because of the differences in salinity, pH factor, and other conditions.

In order to obtain six years protection, or as a matter of fact, any genuine protection, it will be necessary to sand blast the bottoms of the vessels, removing all scale, rust and previous paint, to bring the surfaces down to clean, gray metal. When this is accomplished, the vinyl resin coating will be applied immediately, before oxidation begins. The coating thus applied on a clean metal surface enters the pores of the metal. When such a coating has been applied to the entire bottom up to a point approximately three feet above the water line, the most effective step will have been taken to preserve the most vulnerable part of a vessel. It is the firm conviction of those officials of the Commission immediately concerned with vessel preservation that any more limited attempt to accomplish bottom preservation by removing only loose scale, loose paint, and heavy rust, and painting over old paint or improperly prepared surfaces, would be a complete waste of the funds so expended.

Considering the time that has elapsed since the last drydocking of vessels in the reserve fleets, the Commission feels that it is imperative to commence the application of bottom coatings at the earliest practicable date. The work has already been too long postponed by the numerous delays that have been encountered in trying to get it started. It is proposed that the drydockings and bottom application be scheduled at each reserve fleet so that those vessels longest in the fleet would be treated immediately, with the others



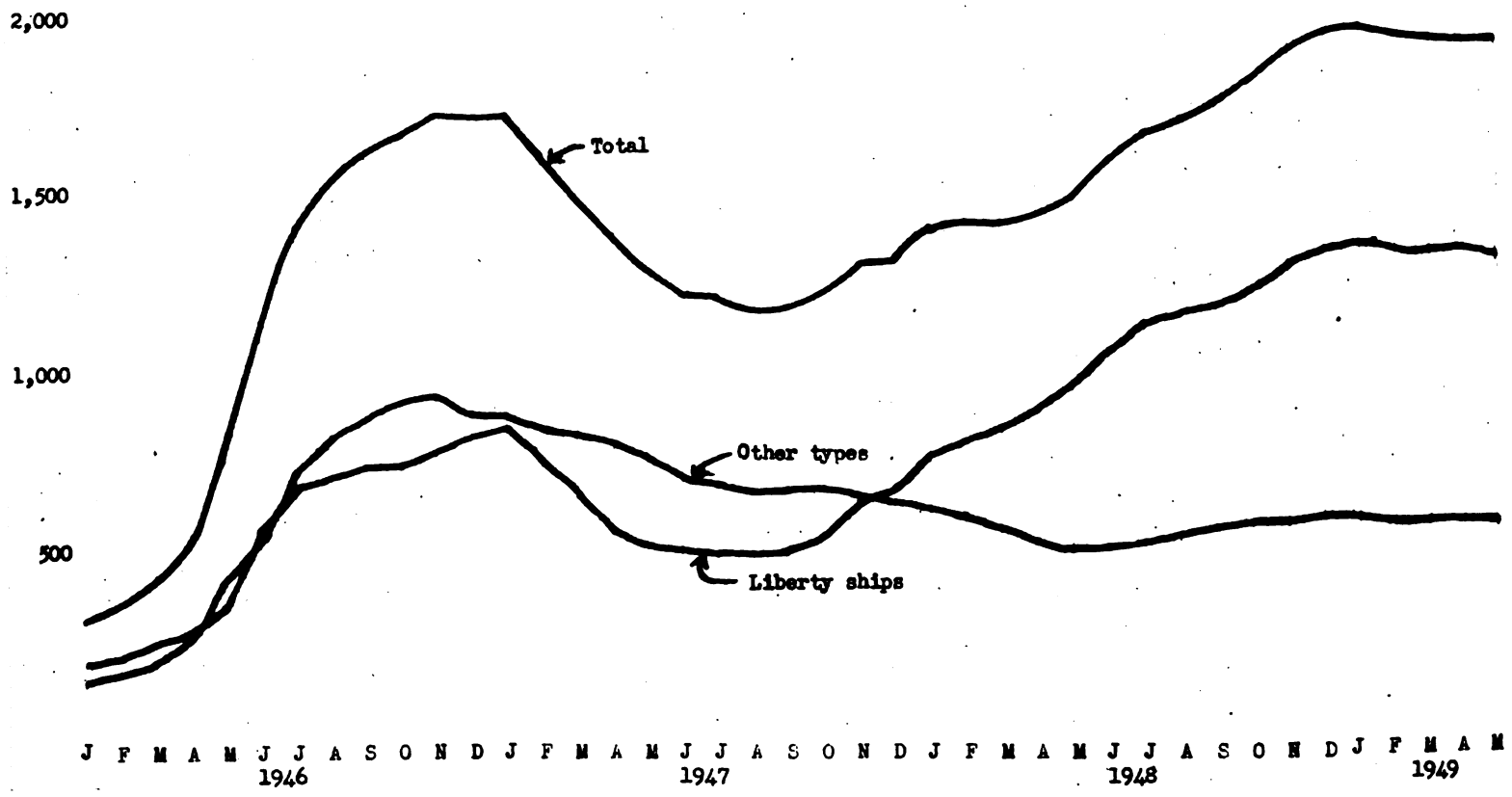
CHIPPING off the paint and rust with hammers.



PEELING off old paint and rust by means of a high pressure water stream, to make ready for painting.

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NUMBER OF VESSELS IN THE U.S.M.C. RESERVE FLEET ON THE FIRST OF EACH MONTH



to follow at a constant rate that would result in one cycle being accomplished in six years. At the conclusion of the first cycle, the second cycle would commence. In fact, on such a schedule each vessel would be drydocked and treated once every six years, and the vessels last received in the fleets would not be reached until the elapse of six years from the start of the program.

Necessary Repairs for Vessels Now in the Reserve Fleet

Of the 1,900 permanent reserve Commission vessels now in the reserve fleets, approximately 1,000 require repair. For the most part these are vessels that were withdrawn from service shortly after the end of hostilities. At that time it was deemed not advisable to make the repairs, inasmuch as it appeared that the Commission would have at least 1,000 vessels more than the total specified by the Joint Chiefs of Staff as necessary to be held for a national emergency. If such had been the case the 1,000 surplus vessels would undoubtedly have been scrapped. An unanticipated demand from abroad resulted, however, in sales for foreign flag operation of hundreds of vessels more than was anticipated. Consequently, those vessels at the reserve fleets which are in need of repairs now form a vital part of the necessary number of ships to meet the requirements of the Joint Chiefs of Staff.

A study of information on the physical condition of these 1,000 vessels at the time they were taken out of service indicates that there is a need for repairs averaging $180,000 per vessel to place the hulls and machinery in sound condition. It should be understood that such repairs to 1,000 vessels constitutes a huge block of work and that if the work were to be undertaken at the present time it would require about one year, fully utilizing all drydock time that commercial facilities would have available after giving priority to the use of their drydocks for normal servicing of the operating merchant marine. It is the Commission's point of view that the repair of these vessels should be undertaken at an early date in order that in these unsettled times the nation may be assured that all of the vessels held in permanent reserve for national defense purposes will be readily available for use in the event of an emergency. It is emphasized that the word "repairs" refers to actual damage and wear resulting from operation of the vessels, and in no manner refers to deterioration. "Deterioration" as used throughout this report refers specifically to a condition that will develop if for any reason the vessels are not properly cared for after they are laid-up.

In April 1948 the Commission requested that $165,000,000 be made available to undertake the work of placing all vessels in the reserve fleets in sound condition. This sum was deemed sufficient to cover all costs in connection with the repairs, including towage from the reserve fleets to the commercial yards and return. It was proposed that every item of repairs should be accomplished at commercial facilities, since the Commission has not, and never has had, any desire or intention of entering the repair business.

In July 1948 the Commission was advised by the Bureau of the Budget that its request for $165,000,000 had been carefully considered in relation to the total defense program, but that the repair of these vessels was considered to be of insufficient priority to warrant action at that time.

In its designation of vessels for inclusion in the permanent reserve for national defense, the Maritime Commission consults with the Departments of the Army and Navy, and all nominations are considered also by the Joint Army-Navy-Maritime Commission Plans Committee. That Committee, being directly interested in the condition of vessels in the permanent reserve fleets, has recently urged that funds be requested for the repair of some 258 reserve fleet vessels of types that would be in first priority demand in case of an emergency. The estimated cost of the repair of these vessels is $50,000,000. The Commission proposes to request such funds as soon as it assembles data with respect to the specific condition of the vessels.

This information with respect to the repair status of vessels in the permanent reserve fleets is included for the purpose

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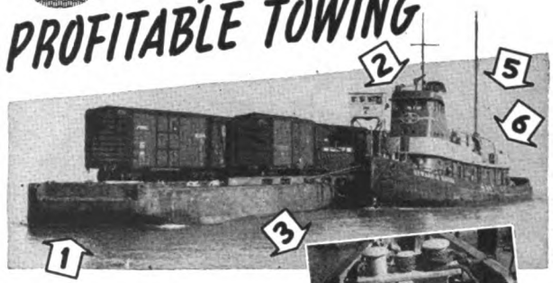
Technical information on NAVICOTE PLASTIC (S.M.) *is available upon request. Write Hart and Burns, Inc., Riverside, California.*

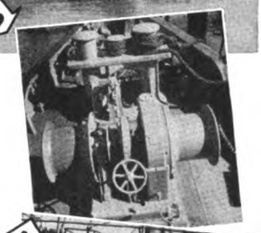


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Number of Vessels in U. S. Maritime Commission Reserve Fleet Sites by Design

DESIGN	1948 Jan. 31	Feb. 29	Mar. 31	April 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31	1949 Jan. 31	Feb. 28	Mar. 31	April 30
Built Prior to September 3, 1939																
Cargo	61	58	47	42	41	36	35	32	32	29	29	26	23	23	21	21
Tanker	10	10	9	7	6	6	5	5	4	4	3	3	2	2	2	2
Passenger	35	31	30	26	26	28	27	24	24	24	25	25	25	24	24	25
Training Ship	6	6	4	4	3	3	3	3	3	3	3	3	2	2	2	2
Tug	3	3	4	3	3	0	1	1	1	1	1	1	1	0	0	0
Coast Guard Cutter	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ferry	1	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1
Seaplane Tender	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Destroyer Tender	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Barge	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0
Built After September 3, 1939 (War-Built Vessels)																
EC2-S-C1—Liberty	816	843	899	971	1070	1143	1166	1180	1235	1308	1340	1361	1348	1345	1343	1332
Z-EC2-S-C2 & C5—Liberty	25	29	29	30	30	31	31	32	33	33	34	34	34	34	34	36
Z-ET1-S-C3—Liberty Tanker	30	9	6	6	6	6	6	7	12	12	11	11	12	12	12	12
T1-M-A1 and A2-Coastal Tanker	16	15	14	13	11	11	11	11	11	11	11	9	9	9	9	9
T2-SE A1, A2 & A3—Tanker	14	6	3	2	1	0	0	0	0	0	0	0	0	0	0	0
T3-S-A1—Tanker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T1-M-BT1—Tanker	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0
T-1M-BT2—Tanker	9	8	5	4	3	3	3	3	3	3	3	3	3	3	3	3
VC2-S-AP2—Victory	65	70	83	90	100	107	113	114	117	124	127	129	128	126	126	127
VC2-S-AP3—Victory	13	13	9	5	9	11	14	27	33	36	42	46	46	46	44	43
VC2-S-AP5—Victory	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
C1-A—Cargo	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12
C1-B—Cargo	26	25	24	26	26	27	29	33	36	37	37	36	35	35	35	34
C1-S-D1—Concrete Cargo	16	10	9	9	9	9	8	8	8	5	3	1	1	1	1	1
C1-M-AV1—Cargo	21	24	20	18	22	26	30	32	35	36	39	48	50	51	52	50
R1-M-AV3—Refrigerated	2	2	3	3	3	3	3	3	2	3	3	2	3	3	3	4
C2-S-E1—Cargo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2-S-B1—Cargo	14	5	6	4	4	4	6	5	4	6	6	4	3	3	3	3
C2-S—Cargo	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
C2-T—Cargo	2	2	2	2	3	2	2	2	2	3	2	2	2	2	2	2
C2-S-AJ1, 2 and 3—Cargo	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
C2—Cargo	5	5	4	4	4	5	5	5	4	3	5	3	3	3	3	3
C2-F—Cargo	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C3-S-A2 and A3—Cargo	12	11	7	0	0	0	0	0	0	0	0	0	0	0	0	0
C3-E—Cargo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C4-S-B5, B1 and B2—Cargo	11	12	11	10	9	9	9	9	9	9	9	9	9	9	9	9
C4-S-A1-Transport	11	13	15	12	11	10	8	8	10	12	14	12	11	11	11	13
N3-S-A1 and A2—Coastal Cargo	31	31	27	24	22	20	20	21	20	20	20	19	19	20	21	22
S4-SE2-BE1—Transport	25	25	25	26	26	26	26	26	26	26	26	26	26	26	26	26
S4-SE2-BD1—Transport	11	11	13	15	15	15	15	15	15	15	15	15	15	15	15	15
S3-S2-BP1—Cable Ship	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
B5-G1—Wooden Barge	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
P1-S2-L2—Transport	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
V4-M-A1—Tug—Oceangoing	38	39	39	39	39	39	42	45	45	45	45	45	45	45	46	46
Miscellaneous	11	10	8	8	10	10	10	8	8	8	8	6	5	5	5	5
B7 D1—Concrete Barge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C1-S-AY1—Transport	7	7	7	3	3	5	5	5	5	4	5	5	5	5	5	5
TOTAL AT END OF EACH MONTH	1432	1418	1445	1486	1595	1675	1713	1745	1818	1901	1947	1966	1947	1942	1938	1930

Source: Reserve Fleet Division, U. S. Maritime Commission.
Note: For previous months, see preceding issues of The Bulletin.

of giving a clear picture of the program for the preservation of vessels in the reserve fleets as differentiated from a repair program. While the two are related in a broad sense, they are separate and distinct in actuality.

Number of Vessels in United States Maritime Commission Reserve Fleet Sites

Date	Total	Liberty Cargo	Victory Cargo	T2 Tankers	Other Types
January 1, 1946	330	189	1	5	135
February 1, 1946	379	217	2	6	154
March 1, 1946	434	242	7	6	179
April 1, 1946	537	280	24	16	217
May 1, 1946	772	351	46	81	294
June 1, 1946	1129	572	67	131	359
July 1, 1946	1423	693	92	173	465
August 1, 1946	1541	713	98	190	540
September 1, 1946	1626	743	102	214	567
October 1, 1946	1678	749	103	221	605
November 1, 1946	1733	791	110	207	625
December 1, 1946	1731	835	112	176	608
January 1, 1947	1738	851	114	172	601
February 1, 1947	1625	768	113	170	574
March 1, 1947	1512	674	105	168	565
April 1, 1947	1401	584	91	165	561
May 1, 1947	1300	523	86	141	550
June 1, 1947	1227	515	85	99	528
July 1, 1947	1204	506	83	100	515
August 1, 1947	1182	502	83	102	495
September 1, 1947	1195	509	84	98	504
October 1, 1947	1236	546	89	100	501
November 1, 1947	1316	646	108	61	501
December 1, 1947	1339	687	115	49	488
January 1, 1948	1418	782	127	28	481
February 1, 1948	1432	816	138	14	464
March 1, 1948	1418	843	143	6	426
April 1, 1948	1445	899	152	3	391
May 1, 1948	1486	971	155	2	358
June 1, 1948	1595	1070	169	1	355
July 1, 1948	1675	1143	178	0	354
August 1, 1948	1713	1166	187	0	360
September 1, 1948	1745	1180	201	0	364
October 1, 1948	1818	1235	210	0	373
November 1, 1948	1901	1308	220	0	373
December 1, 1948	1947	1340	229	0	378
January 1, 1949	1966	1361	235	0	370
February 1, 1949	1947	1348	234	0	365
March 1, 1949	1942	1345	232	0	365
April 1, 1949	1938	1343	230	0	365
May 1, 1949	1930	1332	230	0	368

Disposition of U.S.M.C. Emergency Tanker Fleet

(Continued from Page 114)

larger tankers are being constructed by the New York Shipbuilding Corporation for the Philadelphia Tankers, Inc., associated with the Atlantic Refining Company. These vessels are 659 feet 6 inches long overall, 85 feet beam, and 45 feet depth. Even larger tankers are now being designed for construction in the United States, the present schedule calling for the laying of the keel for the first of these early in 1950.

While 50 of the super-size tankers were ordered from shipyards in the United States, less than one-half of these will fly the American flag. Some will be registered in Panama, Liberia, etc. Where super-size tankships have been documented in the United States to date, the owners have sought and obtained permission from the Maritime Commission, as required under the 1916 Shipping Act, to transfer to foreign flag an equal amount in deadweight tonnage of their old tankers. For instance, the Standard Oil Company (N.J.) have taken delivery of two super tankers, ESSO ZURICH and ESSO SUEZ, and transferred to their Panama subsidiary, the Panama Transport Company, four old tankers of about 60,000 deadweight tons, these being the G. HARRISON SMITH, W. S. FARISH, JOHN D. ARCHBOLD and ESSO PROVIDENCE. Two of the six big tankers ordered by Gulf Oil interests have been completed, the KUWAIT and JAHRA, and registered in Liberia in the name of the Kupan Transport Company.

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Nineteen Yards Invited To Bid on Delta Line Vessel

The Maritime Commission announced it had invited nineteen shipyards to bid on the construction of a combination passenger-cargo vessel for the Mississippi Shipping Company of New Orleans. The new ship will be operated from the United States gulf ports to the east coast of South America.

Bidders were asked to submit bids on each of two types—one a straight commercial ship and the other embodying defense features. Following a study of the bids the Commission will decide which type is to be constructed.

The yards invited to bid are as follows:

New York Shipbuilding Corp.; Newport News Shipbuilding and Dry Dock Co.; Bethlehem Steel Company's Quincy, San Francisco and Sparrow's Point shipyards; Sun Shipbuilding and Dry Dock Co.; Bath Iron Works; Consolidated Western Steel Company, San Francisco; Ingalls Shipbuilding Corp., Pascagoula; Gulf Shipbuilding Corp., Mobile; Alabama Dry Dock & Shipbuilding Corp., Mobile; Moore Dry Dock Company, Oakland, Calif.; Craig Shipbuilding Company, Long Beach, Calif.; Todd Shipyards, San Pedro, Calif., New York and Seattle yards; Avondale Marine Ways, Inc.; General Engineering & Dry Dock Company, Alameda, Calif., and Waterman Steamship, Mobile.

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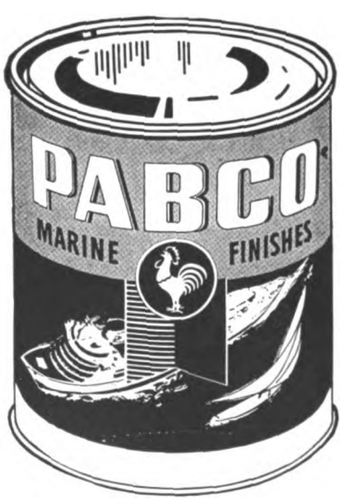
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PROGRESS REPORT

LOG REPORT ON A.B.S. TECHNICAL ACTIVITIES

A concise analysis of American Bureau of Shipping rules changes and their effect on the maritime industry.

Throughout the past year the technical staff of the American Bureau of Shipping has been actively engaged in the review of reports and the review and approval of plans for repairs, alterations, reconversions and new construction. The number of plans required to be dealt with for new construction was extremely large due to the fact that the shipyard working drawings for the large tanker program and for the American Export Lines and American President Lines passenger ships were, for the most part, developed during 1948. The A.B.S. was called upon to deal with a large number of plans for the fifteen vessels of different designs to be built to Bureau class in Japan and for two large passenger vessels and three passenger-cargo vessels building to class in Trieste. In addition, there have been submitted during 1948 an unusually large number of preliminary design plans for various types of vessels to be built to Bureau class in the United States and in several foreign countries as well.

Reorganization of Technical Committees

After long consideration and discussion with interested parties in the industry a change has been instituted in the organization of the technical committees of the Bureau. This had become a practical necessity in recent years owing to the radical increase in the complexities of ship design and construction, particularly respecting engineering detail as well as the shift in shipbuilding policy away from yard manufacture of machinery, boilers and component parts of the installation.

Matters involving details of design will henceforth be submitted for consideration to the already established sub-committees of the Bureau and from time to time advisory sub-committees which will be asked to serve when needed.

Recommendations of these sub-committees will then be submitted to the committees on naval architecture, marine engineering, Great Lakes and western rivers for consideration and action in the broader aspects of design in their respective fields. These committees will be encouraged to formulate requests for investigation and consideration of specific problems on the part of the appropriate sub-committees when desired.

The recommendations of these four principal committees will thereafter be presented to the technical committee of the American Bureau for final decision in the light of the best interests of the combined industry; design, construction and repair, operation and economics receiving due consideration.

A judicious selection of individuals to serve on all these committees has been made and it is confidently expected that the new setup will prove to be a great time saver to the members of the committees and at the same time will permit the American Bureau Technical Staff to make better use of the talent which its committees have unhesitatingly made available in the past and thereby enhance the value of the technical services of the Bureau to the industry at large.

Changes in the Rules

A large amount of data of the performance of vessels built during the recent wartime shipbuilding program, of modern design with modern methods of construction, has been collected and, in view of the unprecedented large numbers of sister ships engaged in comparable services, very valuable information was obtained. The results of these studies indicated various improvements in the rules and these have been expressed in the new requirements and tables included in the 1948 edition of the rules. In the preparation of the revised rules, numerous modifications were also made towards the end of presenting the material in what is felt to be a much more easily used form and the tables were expanded to include sections of the types which have been in common use with welded construction. The rules covering refrigeration installations were also revised and modernized and extended to include requirements for Freon systems, which are now in common use. Considerable investigations were also made of reports of crankcase explosions on Diesel engines and, in conjunction with the Diesel Engine Manufacturers Association, revised specifications for the venting of crankcases were included in the rules and it is believed this step will eliminate the difficulty.

The rules contain revised tables which are much more easily used by designers and sections adaptable to welded construction. They also include revised specifications for hull steel adopted after long consideration by our materials and naval architecture sub-committees. These are intended to be put into full effect as rapidly as conditions in the steel producing industry permit and have been adopted as a result of the extensive investigations carried out both in the United States and abroad in connection with failures in large welded structures.

The changes in the 1949 edition of the rules are of comparatively minor nature but a large amount of preliminary work has been done in connection with a complete revision of the rules for tankers so that in future editions the published rules will include those improved arrangements and details which have been developed and applied in the last few years. There will also be added therein, to cover the larger vessels now being designed, the extension of the tables, etc., which it has not formerly been necessary to publish. Preliminary work has been done in formalizing the Bureau standards for the construction of the various types of barges and towboats used on the western rivers in order to put these into a form suitable for discussion with the newly appointed western rivers technical committee.

Reinforcing Liberty Ships and Rudder Changes

All of the Liberty ships which are operating and which are still in class with the Bureau have modified or reinforced hatch corners and with very few exceptions those vessels which do not have riveted shell seams have had riveted sheer strake straps or gunwale angles installed. The rate of incidence of serious failures in these vessels has been reduced from 4.1 to less than .5 percent of ships in service.

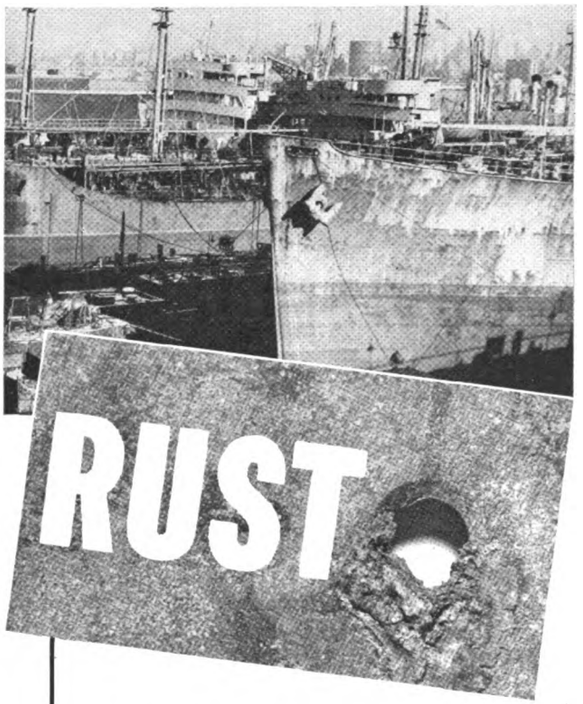
Early in 1947 reports were received of failures of the rudders on this type of vessel and these began to accumulate in such quantity as to make it necessary that some action be taken to reinforce or replace the rudders. Accordingly, steps were taken to stop immediately the manufacture of spare or replacement rudders of the original design and in collaboration with the original designers and various owners new improved designs were developed to be used as replacements. In addition, instructions were issued and given wide distribution to the surveyors, owners and operators, covering methods to be followed in the examination, repair and reinforcement of the existing rudders.

The program of reinforcing rudders on Liberty ships which was inaugurated in the middle of 1947 was continued into 1948 with the result that all of the vessels of this type, which are now operating and which are in class with the Bureau, have had the rudders reinforced. The service records for these vessels indicate that the measures which were taken to prevent major failures in the rudders have been effective.

Liberty Ship Shaft Failures

The first of the Liberty ships was deliv-

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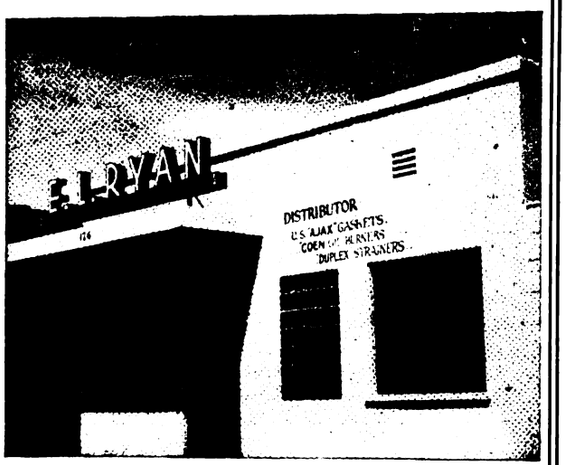


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ered in 1941 but it was not until the end of 1945 that their percentage of propeller shaft failures started to exceed the averages for all other types. The failures fell into two distinct categories. One type was due to corrosion fatigue and was indicated by a circumferential groove around the shaft at the end of the liner. This type was caused by a defective seal at the propeller and the records for 1947 indicate that failures from this cause have been practically eliminated. The other type of failure took the form of a fine hair line crack starting from the forward end of the keyway on the driving side. A torsional vibration analysis of the propulsion system was made by the Bureau staff and the General Electric Company was retained by the Bureau to carry out torsiograph tests aboard ship, which verified the staff's findings. The tests showed that there is a third order critical speed in the normal operating range of about 4500 pounds per square inch. This vibratory stress is sufficiently high to cause the type of failure noted, but only after the shafting has been run at or near the peak for a considerable length of time. As soon as this condition was disclosed by the actual tests the Bureau recommended the engines be operated at a safe speed of rotation.

Investigations and extensive tests have continued with a view toward establishing causes for propeller shaft breakages on Liberty ships and determining remedial measures. On April 9th, 1948, a circular letter was issued suggesting various steps which these investigations had disclosed should attain the desired results. Several of these methods have been and are being adopted and in accordance with Bureau policy, check tests are being performed on the first installation of each different method by competent people under the supervision of the Bureau's technical staff. Minute attention is being given to shafts at every opportunity to make surveys, and the use of magnetic particle inspection has aided in detecting defects which have not in the past been discoverable by visual means.

During 1948 there has been a gratifying reduction in the number of Liberty ship propellers lost at sea. The recommendation of the Bureau reducing engine speed from the critical point and the more rigid inspection of the shafting by magnetic particle method and at two year intervals undoubtedly account for this. In line with the suggestions put forward by the Bureau's technical staff to permit operation outside of the critical range, one flywheel installation has been made and crankshaft counterweight installations are contemplated. Many new propeller designs have been worked up to absorb more horsepower at the reduced revolutions. Some have been tested in service with reported good results as to ship speed and fuel consumption.

Tanker Crack Arrestors

Early in 1947 the T2 Tanker FORT DEARBORN broke in two at sea. This brought the total number of such failures, in relation to the number of vessels of this type in operation, to such a value it was considered necessary that some action be taken to guard against their repetition. Accordingly, in May, 1947, there was issued a letter to all owners of this type of vessel requesting that at least four riveted straps be installed to serve as crack-arrestors and that this program be taken in hand at the first convenient opportunity.

Splendid cooperation was received from most of the owners but unfortunately, due to shipyard strikes and the urgent demands for tanker tonnage, the program lagged. In the latter part of the year there occurred three additional serious failures in this type of vessel, which brought the rate of incidence up to such a figure it was decided that the fitting of the straps should be expedited as much as possible and no longer deferred to suit the owners convenience; therefore, additional instructions were sent out to the owners urging upon them the necessity for having the straps fitted at the first possible opportunity. Concurrent with the Bureau's instructions, the U. S. Coast Guard also issued similar orders applicable to all vessels of this type under the American flag. These actions served to expedite this program, so that the fitting of riveted crack arrestors on the T2 tankers was practically completed during the first half of 1948. At present, of 413 vessels of this type classed with this Bureau, all but two have had the crack arrestors fitted. These two vessels have been unavailable for this work but it is scheduled to be done within the very near future. There have been reported three cases of fractures which might have been serious had not crack arrestors been fitted. In no case has a crack passed the arrestor.

(Continued on Page 149)

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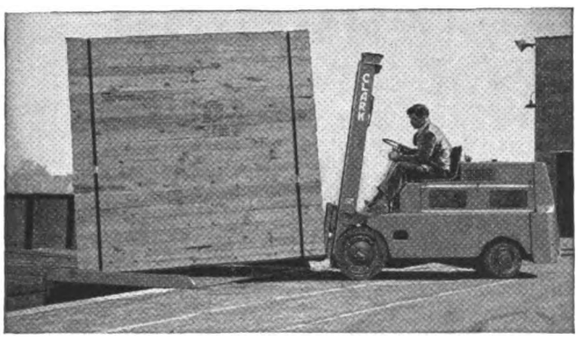
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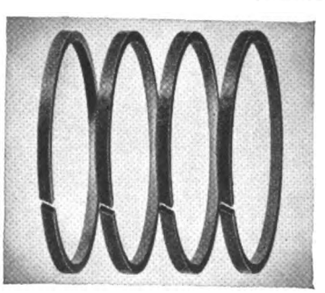
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A LOG EXCLUSIVE

Operation Scrapheap

BUSINESS IS STILL BOOMING

Scrapping America's obsolete ships is still big business. Here is a continuation of The LOG's exclusive survey of shipbreaking.

The scrapping of old, obsolete and damaged vessels continued in considerable volume during 1948, although not to such a great extent as in 1947. The revival of the ship breaking industry in the United States, as reported in full detail in an exclusive survey for the July 1, 1948 Review and Yearbook Number of The LOG and continued in this issue, is reminiscent of the activity which flourished in the 1920's and early 1930's. However, the scrap shortage which existed in the United States all through the war years and in the postwar years has been to a large extent overcome in recent months, and with the demand for new steel products showing some evidence of tapering off during the spring months, it is quite likely that the scrapping of ships will not be as profitable a venture as it has been. In fact, the peak record prices paid in 1948 of $40 to $45 a ton for No. 1 steel scrap has now experienced a considerable drop. While the steel mills had continued at a full operating rate since the end of the war well into 1949, the rate has dropped recently. Some ship loads of scrap were imported from Germany during 1948, but with the reduced price of scrap it is doubtful whether this movement is still economically feasible.

The total number of large American flag vessels sold for scrapping since the end of the war is 456, representing 2,932,288 gross tons and 4,006,910 deadweight tons, with 1,794,225 horsepower of propelling machinery. This includes only vessels of 1,000 gross tons and over and does not include the many small miscellaneous commercial craft and hundreds of naval landing vessels which have also been scrapped. The names of the additional vessels sold for scrapping since last reported in the annual issue of The LOG are tabulated on the following pages, together with their tonnage and propelling plants, and the identity of their former owners and the purchaser. Comparatively few old merchant vessels remain in the privately owned American merchant marine, so that unless a considerable number of warbuilt vessels now in the Government laid-up fleet sites are declared surplus and ordered destroyed, the shipping industry will no longer be a principal source of supply for steel scrap.

It has been estimated that approximately 2,000,000 tons of steel scrap will be secured from the hulls, decks and erections of the naval vessels and merchant ships sold for demolition by American shipping interests, the Maritime Commission and the Navy. In addition large quantities of other valuable metals, such as lead, brass and copper, and items of salvageable machinery, like pumps, motors, engines, winches, etc., will be obtained.

The Maritime Commission has been the principal seller of old ships. In addition to disposing of its war damaged vessels, impractical to repair from an economic standpoint, the Government's shipping agency also had many obsolete vessels taken as trade-ins when selling new tonnage to American citizens. The Commission is also the disposal agent for the thousands of naval landing craft built during the war and since declared surplus.

Including both small and large vessels of all types, the Maritime Commission has sold for scrapping a total of 737 vessels, representing a lightweight tonnage of 1,935,000 tons. This includes hundreds of landing craft which are comparatively simple to scrap and have brought good prices, especially in consideration of the fact that they are but a few years old. The largest sale of old ships for scrapping reported to date by private shipping interests was that announced earlier this year by the Standard Oil Company, N.J., which disposed of fifteen tank ships ranging in age from 32 to 23 years and in size from 16,130 to 9,650 deadweight tons. Of these, five were operating under the American flag and ten under Panamanian registry in the name of their subsidiary, the Panama Transport Company, the total representing 188,291 deadweight tons of tankers.

Prices paid for old ships for scrapping during 1948 continued at a rather high level with five year old Liberty ships bringing as much as $68,000, or about $18 per lightweight ton of ship. Twenty-five year old tankers have been purchased by ship scrappers for about the same rate. However, individual prices paid for these scrapped vessels have varied considerably, much depending upon the age of the vessel, the amount and kind of scrap material, and the type of ship and propelling machinery. All sales of vessels by the Maritime Commission have been arranged in a competitive bidding system through the Division of Vessel Disposal. This work has been handled in a commendable and orderly manner, resulting in the maximum return to the taxpayer. The Commission has refrained from dumping large numbers of old vessels on the market at one time, which prevented an earlier break in prices. Present terms under which these old vessels are being sold for scrapping by the Commission provides that the hull, engines, machinery and equipment shall be completely scrapped, dismembered or destroyed within eighteen months after date of delivery of the vessel to the buyer, with the alternative provision in specific cases that only the hull is to be scrapped and the machinery can be salvaged. A system of inspection by the Maritime Commission representatives maintains a check on the buyer to see that the scrapping of the vessel is completed.

A great variety of ships have been sold for demolition, ranging from small sound steamers and ferryboats, colliers and coastwise cargo boats, up to ocean-going vessels such as combination passenger and cargo liners, tankers, cargo liners, refrigerated ships, aircraft carriers, frigates, battleships, Great Lakes bulk ore carriers, and warbuilt ships such as Liberty and Victory cargo vessels, T2 tankers, C1 and C1-M cargo ships. In all, representing a huge fleet. Largest of the vessels scrapped to date have been the battleships NEW MEXICO, WYOMING, UTAH and OREGON, and the former French Line trans-Atlantic luxury passenger liner NORMANDIE, which as the U.S.S. LAFAYETTE was sold for scrapping to Lipsett, Inc., New York City, for $161,680. Lipsett, Inc., also scrapped the four battleships, concluding the demolition in 1948.

In addition to the well known American ships destroyed, as listed in the previous report by The LOG, other equally well known vessels were sold for scrapping in 1948 and early this year, including the famous Great Lakes passenger ship GREATER BUFFALO, operated for many years by the Detroit and Cleveland Navigation Company. This vessel was acquired by the Navy early in the war and converted into an airplane personnel training craft, with a huge landing platform constructed over the entire length of the ship. It was of necessity, because of its length and for strategic reasons, kept on the Great Lakes and thousands of aviators received their basic training on this vessel.

The coastwise combination passenger and cargo vessel ALLEGHENY, operated before the war by the Merchants and Miners' Line, has also been sold for scrap. During the war it was used by the military forces under the name of the AMERICAN SEAFARER. The T2 tanker PONAGAMSET, which broke in half at Boston, has now been disposed of. The old bulk carrier, JASON, now thirty-six years old and long a familiar sight, operated by the American Steamship Company before the war, was recently sold,

(Continued on Page 144)

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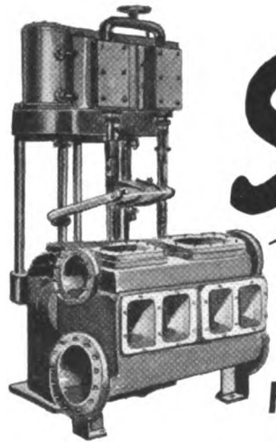
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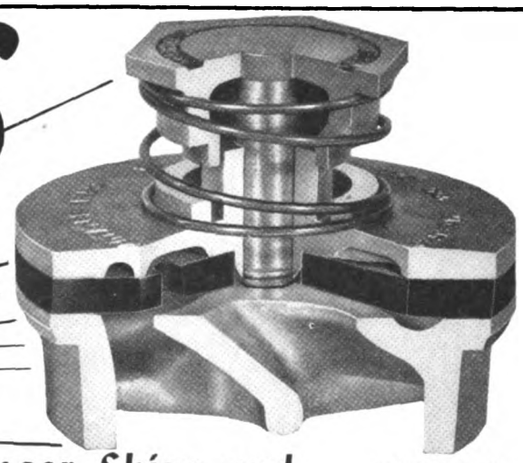
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Combustion Controls, Bailey	75. ea
Doors, Watertight, R.H.	20. ea
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Hawser Reels, 140 Fath.	110. ea
Hawser Reels, 90 Fath.	70. ea
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Orsats, Hays, Gas Analysis Sets	50. ea
Sperry Wind and Course Indicator	300. ea
Steel Accommodation Ladders	290. ea
Steamboat Jacks, 15-ton	15. ea
Resistor Banks, Unionmelt	5. ea
T2 Coupling Bolts, oversize	15. ea
T2 Tanker Thrustshafts	800. ea
Valves, various—1½" angle and check	10. ea
Wrenches, Propeller Nut	10. ea

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Balltop Rollers, 2"	1. ea
Chain Hoists, 25-ton	265. ea
Crane, Portable, 2-ton	400. ea
Gantry Crane, 10-ton, 50'	5900.
Generators, Gas-driven, recond. 5 & 10 KW	250. ea
Furnace, blacksmith, heating and annealing, wgt. 10-ton, 7½ HP, Blower—oil-fired	900. ea
Davit, Lifeboat, 4,000-lb.	125. ea
Lifeboats, Motor-Dr., 24', recond.	1000. ea
Welding Mach., Westinghouse	150. ea

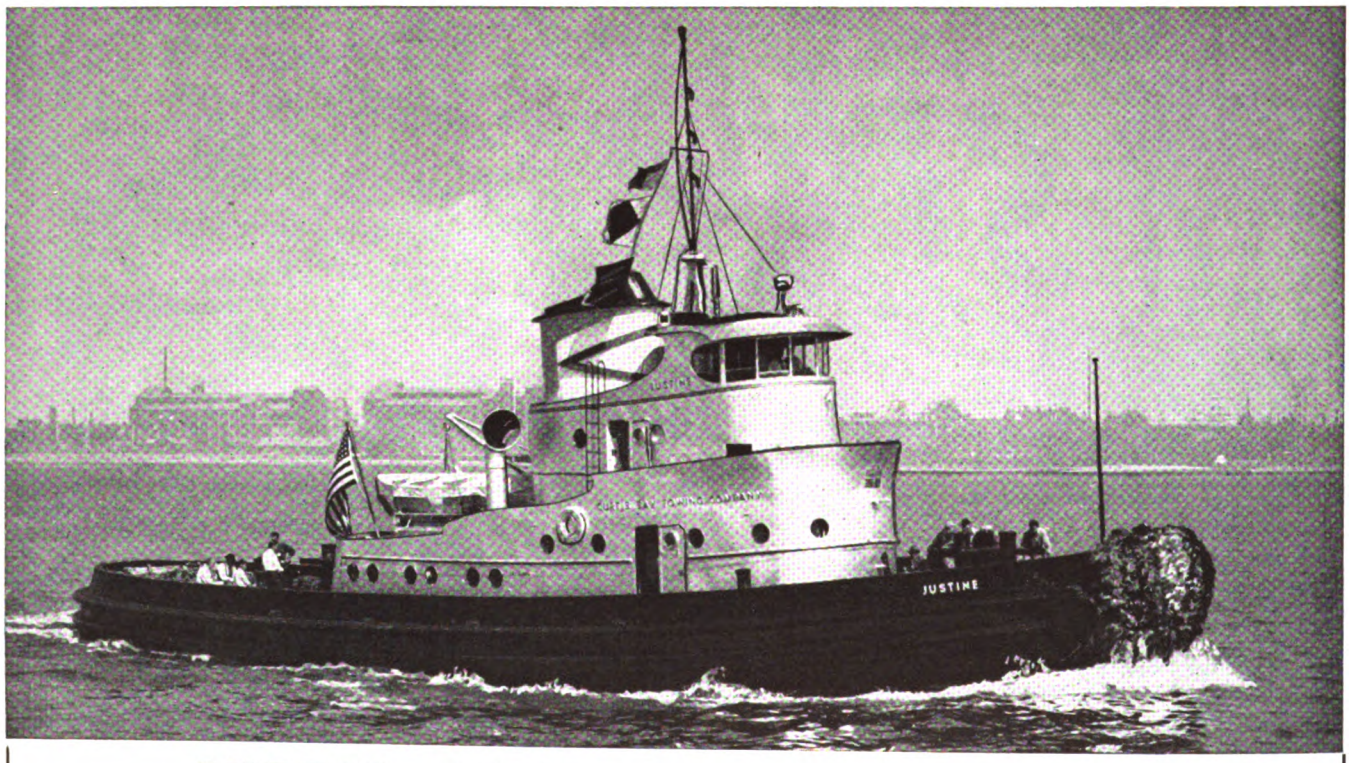
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DISPOSITION OF VESSELS SOLD FOR SCRAPPING SINCE THE END OF THE WAR

(Continued from the July 1, 1948 Yearbook and Review Number of The LOG)

BY PRIVATE AMERICAN SHIPPING INTERESTS, THE MARITIME COMMISSION AND THE NAVY

Name of Vessel and Purchaser	Type	Year Built	G.T.	D.W.T.	Propulsion	Former Owner
Basalt Rock Co., Napa, Cal.						
Elwood	Tanker	1918	7,098	11,500	R 3,000	Sun Oil Co.
ex D. J. Moran, ex Chester Sun						
North	Ferry	1911	1,720	1,000	R 2,000	A. T. & S. Fe Ry.
J. C. Berkwit & Co., New York, N. Y.						
Motocarline	Tanker	1925	8,600	12,415	D 3,100	PanamaTransport Co
Prometheus	Tanker	1924	8,889	13,270	D 3,100	"
Boston Metals Co., Baltimore, Md.						
Flying W	Carrier	1944	10,100	10,000	R 9,000	Pratt S. S. Line
ex Attu						
Oneida Victory	Victory	1944	7,607	10,584	T 6,600	Maritime Commission
H. H. Buncher Co., Pittsburgh, Pa.						
Hibueras	Cargo	1920	1,445	1,870	R 1,250	United Fruit Co.
Sable	Passenger	1924	7,739	3,000	R 11,000	Detroit & Cleveland Nav. Co.
ex Greater Buffalo						
Condenser Service & Engr. Co., Hoboken, N. J.						
John Carver	Liberty	1942	7,176	10,735	R 2,500	Maritime Commission
Dulien Steel Products, Inc., Seattle, Wash.						
Patoka	Tanker	1919	8,267	11,116	R 2,990	U. S. Navy
Walter W. Johnson Co, San Francisco, Cal.						
Admiral Halstead	Cargo	1920	3,289	5,000	T 1,650	Pacific S.S. Co.
Admiral Nulton	"	1920	3,267	5,000	T 1,650	"
Blenheim	"	1923	5,097	8,550	D 2,320	Maritime Commission
The Learner Co., Alameda Cal.						
American Seafarer	Passenger	1923	5,486	3,300	R 2,700	Merchants & Miners Line
ex Allegheny						
John I. Nolan	Liberty	1943	7,176	10,439	R 2,500	Maritime Commission
F. Mac Donald & Co., Seattle, Wash.						
Silverado	Cargo	1918	2,298	3,680	R 1,000	Silverado S.S. Co.
Northern Metals Co., Philadelphia, Pa.						
Ponaganset	T2-Tanker	1944	10,440	16,500	TE10,000	Maritime Commission
A. C. Bedford	Tanker	1918	9,485	15,775	R 3,000	Standard Oil Co. N. J.
Beacon	"	1921	10,388	16,130	R 3,000	"
Esso Dover	"	1921	8,880	13,860	R 4,300	"
Fred W. Weller	"	1917	9,485	16,075	R 3,000	"
Paul H. Harwood	"	1918	6,610	10,840	T 3,140	"
George G. Henry	"	1917	6,395	10,840	R 2,800	Panama Transport Co.
Livingston Roe	"	1921	8,150	11,360	R 2,800	"
Alcoa Prospector	Cargo C-1	1941	6,797	9,398	T 4,400	Alcoa S.S. Co.
Marina	"	1942	5,086	7,500	T 4,400	Marine Commission
Back Bay	Bulk	1908	2,382	3,500	R 1,500	Gartland S.S. Co.
Brockton	"	1908	2,382	3,500	R 1,350	"
Menemsha	"	1918	1,992	3,000	R 1,200	Bison S.S. Co.
Monomy	"	1918	2,084	3,000	R 1,200	Steel Products Transportation Co.
George H. Nutman, Inc., Brooklyn, N. Y.						
Exminster	Cargo	1919	4,985	7,500	T 2,500	Moore-McCormack Lines
Patapsco Scrap Corp., Baltimore, Md.						
Cornore	Bulk	1920	7,051	11,300	R 2,800	Ore S.S. Corp.
ex Cubore						
Jason	Bulk	1913	9,716	14,600	R 6,500	American S.S. Co.
Edward Peirce	Collier	1914	4,387	6,920	R 1,700	Eastern Gas & Fuel Associates
Wassuc	Cargo	1924	1,670	1,000	R 2,000	J. W. Sullivan Co.
ex Yale						
Pontiac	"	1937	2,321	2,600	D 3,500	Maritime Commission
Hugh Williamson	Liberty	1942	7,177	10,550	R 2,500	"
Steel Pier	Passenger	1897	1,767	1,000	R 2,000	Cape Cod S.S. Co.
Wright	Tender	1920	9,193	9,000	T 6,000	U. S. Navy
ex San Clemente						
Melville	Tender	1915	5,100	7,500	T 4,000	"
Clio	Tanker	1926	8,580	12,650	D 3,100	Panama Transport Co.
Phoebus	"	1923	8,863	13,370	D 3,200	"
Svithold	"	1917	6,550	9,650	D 2,400	"
Josiah Macy	"	1917	6,401	9,750	D 2,400	"
Dean Emory	"	1919	6,664	11,310	R 2,800	"
H. M. Flagler	"	1918	8,207	11,500	R 2,800	"
Southern Scrap Material Co. New Orleans, La.						
Comol Cuba	Tanker	1919	5,036	8,210	T 2,500	Commercial Molasses Corp.
Southern Ship Wrecking Co., New Orleans, La.						
S. Wiley Wakeman	Liberty	1944	7,210	10,920	R 2,500	Maritime Commission
Sun Shipbuilding and Dry Dock Co., Chester, Pa.						
Tackle	Lumber	1912	2,264	3,914	R 1,800	W. R. Chamberlin & Co.
Bennington	Bulk	1897	2,029	3,245	R 700	Gartland S.S. Co.
Brake	Cargo	1920	5,347	6,340	R 2,000	Maritime Commission
Ormondale	Tanker	1919	4,302	6,800	R 2,200	"
Trenton Ship Scrapping, Inc., Trenton, N. J.						
Meteor	Passenger	1899	2,868	2,000	R 4,200	Colonial Line
ex Chester W. Chapin						
SOLD TO FOREIGN SHIP SCRAPPERS						
British Iron & Steel Corp., Ltd.						
Lake Chelan	Bulk	1918	2,010	2,942	R 1,250	Lake Chelan S.S. Corp.
Fort Lac La Ronge	Liberty	1942	7,131	10,384	R 2,500	Maritime Commission
Helena Modjeska	Liberty	1944	7,176	10,430	R 2,500	"
T Hassanally & Co.						
Robert F. Hoke	Liberty	1943	7,176	10,550	R 2,500	"
Far East Panamanian Navigation Co.						
Don Marquis	Liberty	1943	7,176	10,500	R 2,500	"
Gabriel L. Gabrielidis						
Samsylarna	Liberty	1944	7,210	10,920	R 2,500	"
Frank Rysdyk's Industries, Ltd.						
Samlong	Liberty	1943	7,210	10,735	R 2,500	"
H. G. Pounds						
Lee S. Overman	Liberty	1943	7,176	10,550	R 2,500	"
Simon Simons						
Colin P. Kelly, Jr.	Liberty	1942	7,176	10,550	R 2,500	"
Francois Heuvelmans, Antwerp, Belgium						
Yankee Arrow	Tanker	1921	8,046	12,800	R 3,200	Socony-Vacuum Oil Co.
Phillips, Kraft & Fisher						
Antietam	Tanker	1919	6,972	10,100	R 2,800	Paco Tankers
James E. Layne	Liberty	1944	7,176	10,424	R 2,500	Maritime Commission
Richard Montgomery	Liberty	1943	7,225	10,500	R 2,500	"
Francis Asbury	Liberty	1943	7,176	10,300	R 2,500	"
Hollywood	Cargo	1920	5,498	8,800	R 2,800	Pope & Talbot
Etabl. Van Heyghen Freres, S. A.						
William D. Burnham	Liberty	1943	7,176	10,500	R 2,500	Maritime Commission
Sverre Helmersen	Liberty	1944	7,210	10,920	R 2,500	"
Etabl. Dohmen Habets, S. A.						
Horace Binney	Liberty	1942	7,191	10,920	R 2,500	Maritime Commission
Charles C. Glover	Liberty	1944	7,210	10,920	R 2,500	"
Turner & Hickman, Ltd.						
Byron Darnton	Liberty	1943	7,176	10,920	R 2,500	"
Georgetown Victory	Victory	1945	7,604	10,584	T 6,600	"
Nortuna Shipping Co.						
Norbella	Cargo	1921	6,998	10,380	R 2,600	Pacific S.S. Co.
Hua Sheng & Co., China						
Alcoa Pilot	Cargo	1919	4,869	7,564	R 2,500	Alcoa S.S. Co.
China Merchants & Engineers, Inc., China						
Vandalia	Tanker	1921	9,563	16,075	R 3,500	Standard Oil Co., N. J.
Brockholst Livingston	Liberty	1942	7,176	10,807	R 2,500	Maritime Commission
Harrington Emerson	Liberty	1944	7,176	10,480	R 2,500	"
Richard V. Oulahan	"	1944	7,176	10,750	R 2,500	"
John A. Rawlins	"	1942	7,181	10,500	R 2,500	"
Jack Singer	"	1944	7,207	10,494	R 2,500	"
William B. Allison	"	1944	7,176	10,572	R 2,500	"
Ocelot	Cargo	1918	6,600	9,235	R 3,000	"
Asia Development Corp., Shanghai, China						
Banshee	Tanker	1917	6,353	10,200	R 2,800	Pure Oil Co.
Kenwood	Tanker	1916	6,368	9,830	R 3,000	The Texas Co.
Belusan	Tanker	1920	8,537	13,725	D 3,000	Standard Oil Co. N. J.
ex Vistula						
Abarenda	Tanker	1916	6,878	10,645	R 3,000	Socony-Vacuum Oil Co.
ex Acme						
Mariveles	Tanker	1920	7,050	10,829	D 3,060	"
ex Jamestown						
Orissa	Tanker	1901	5,837	10,000	R 2,300	Maritime Commission
Edgar Allan Poe	Liberty	1943	7,176	10,791	R 2,500	"
Benjamin Pelzotto	"	1944	7,210	10,920	R 2,500	"
Juan De Fuca	"	1944	7,176	10,844	R 2,500	"
Joseph Carrigan	"	1945	7,176	10,735	R 2,500	"
Henry L. Abbott	"	1943	7,176	10,439	R 2,500	"
John C. Fremont	"	1942	7,176	10,550	R 2,500	"
Etamin	"	1943	7,176	10,500	R 2,500	"
Antelope	"	1943	7,176	10,500	R 2,500	"
ex M. H. De Young						
Orvetta	Cargo	1920	5,959	9,550	D 2,900	"
Flagler	C1M Cargo	1945	3,805	5,032	D 1,700	"
Hai Hsiang	Cargo	1920	2,673	4,190	R 1,500	North Atlantic & Gulf S.S. Co.
ex Norlago						
Hai Lu	Cargo	1919	2,676	4,300	R 1,500	Agwi Lines
ex Alamo, ex Lake Elon						



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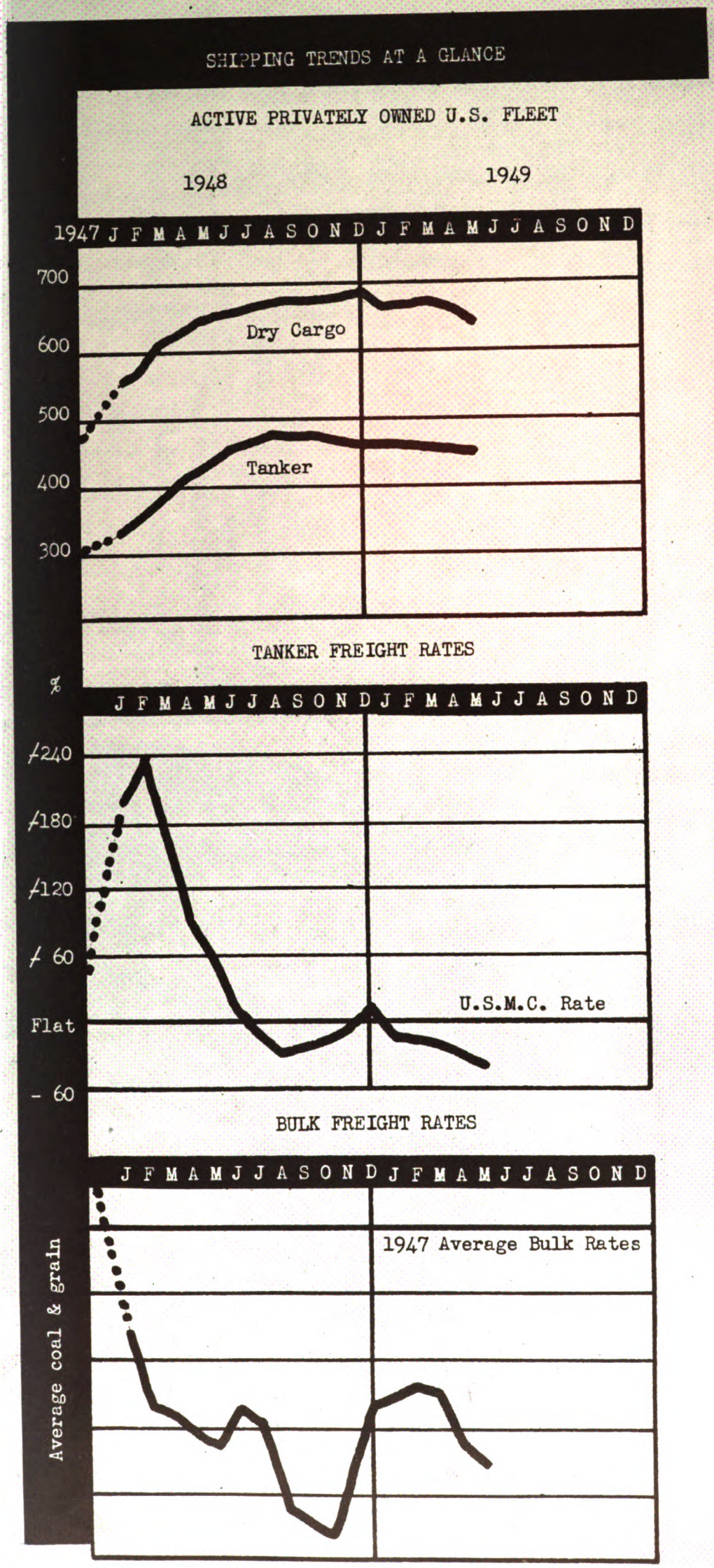
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(Continued from Page 140)

together with another well known bulk ore ship, the CORNORE, ex CUBORE, of the Ore Steamship Corporation.

The old Long Island Sound passenger steamer CHESTER W. CHAPIN, built in 1899, has finally made her last trip. Before the war the vessel was operated by the Colonial Line as the METEOR between New York and Providence and during the war was used by the military forces. Another sound steamer of 1897 vintage, the STEEL PIER, has also been destroyed. One of the few molasses tankers operated before the war, the COMOL CUBA, owned by the Commercial Molasses Corporation, and a frequent sight in the Gulf Stream on her run between New York and Cuba, was recently scrapped. Many additional prewar tank ships have been scrapped, 129 appearing in these listings. They range in age from 24 to 48 years of age—well beyond the normal life of a tanker, their life having been extended due to the necessity of keeping all of this type of tonnage employed during the war years.

In the list of former owners of old tonnage sold for scrap, in addition to those just named, are such well known names in American maritime history as the United Fruit Company; Alcoa Steamship Company; AGWI Lines; Matson Navigation Company; American Mail Line; New England Steamship Company; Luckenbach Line; Ocean Steamship Company of Savannah; Bull Line; Munson Line; Pacific Steamship Company; Lykes Bros. Steamship Company; American President Lines; Waterman Steamship Corporation; Isthmian Steamship Company; American-Hawaiian Line; Calmar Steamship Corporation; Eastern Steamship Lines; American Export Lines; Moore-McCormack Lines; United States Lines; C. D. Mallory and Company; American South African Line (now the Farrell Line); Koppers Coal Company; Southern Pacific Steamship Company; Mississippi Shipping Company; Mystic Steamship Company; M. & J. Tracy, Inc.; and the Grace Line.

Practically every American oil company appears in the list, including the Standard Oil Company, N.J.; Socony-Vacuum Oil Company; The Texas Company; Gulf Oil Corporation; Union Oil Company; Richfield Oil Corporation; Atlantic Refining Company; Cities Service Oil Company; Paco Tankers; Standard Oil Company of California; Continental Oil Company; Charles Kurz & Company; National Bulk Carriers; Republic Oil Refining Company; Sabine Transportation Company; Sun Oil Company; and the Pure Oil Company.

The Great Lakes is represented in the list by the Pittsburgh Steamship Company, now operating some 60 bulk ore carriers; Great Lakes Steamship Company; Bethlehem Transportation Company; Wilson Transit Company; Gartland Steamship Company; Interlake Steamship Company; Reiss Steamship Company; Buckeye Steamship Company; and the Pioneer Steamship Company.

Ship breaking has continued as a side line in some of the shipbuilding plants of the United States, as previously reported

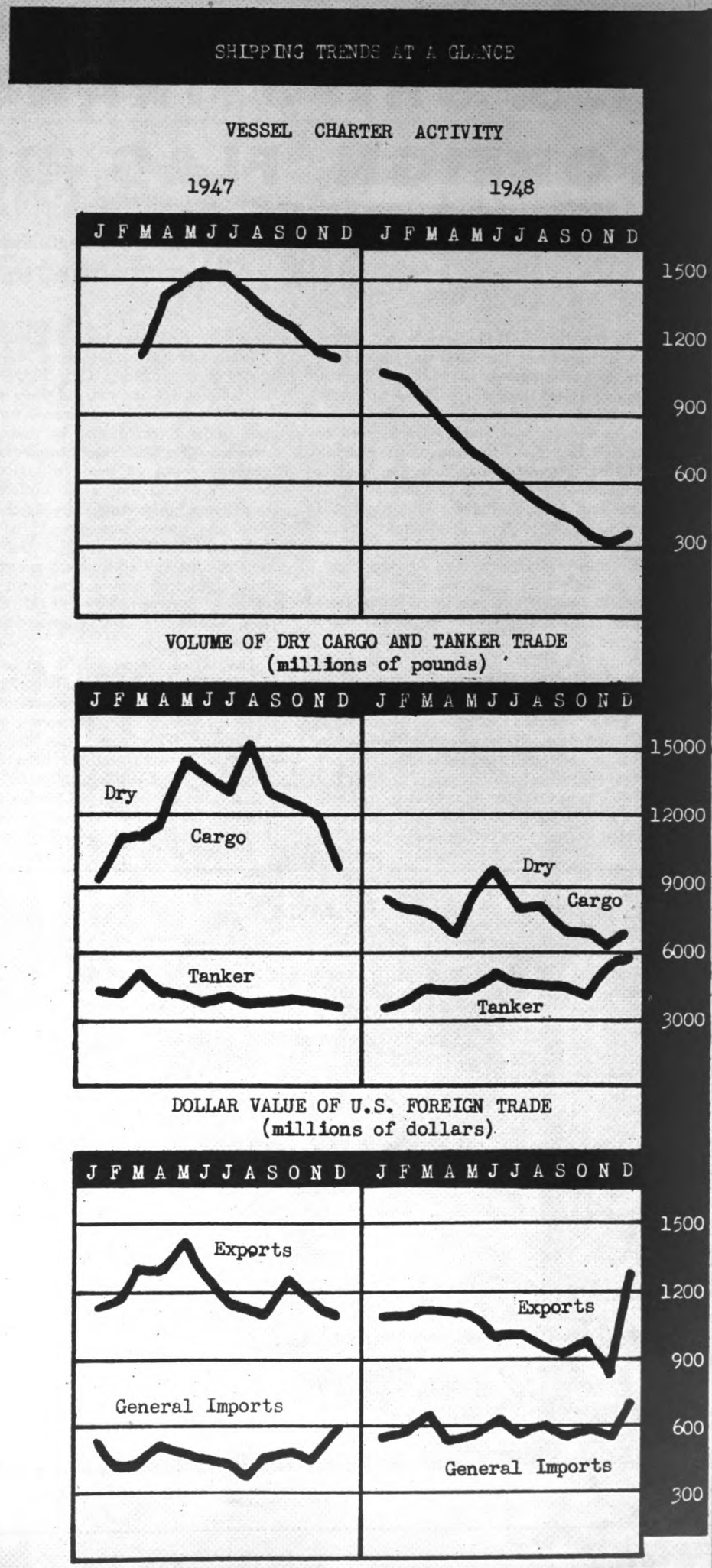
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in The LOG. During the past year the Sun Shipbuilding and Dry Dock Company broke up a number of vessels, as well as the Newport News Shipbuilding and Dry Dock Company; the Bethlehem subsidiary at Baltimore, the Patapsco Scrap Corporation; and the Kaiser Company on the Pacific Coast. It will be noted from the accompanying tabulation that ship scrapping is a wide-spread activity in the United States. Among the most active of the independent companies in this business is the Boston Metals Company of Baltimore and the Northern Metals Company of Philadelphia.

It will also be noted from the listing that many of the war-damaged Maritime Commission vessels isolated at a foreign port for a considerable period have now been disposed of to foreign interests for scrapping. A considerable number of these vessels have been acquired by Chinese interests, and some by interests on the Continent and in England. Many damaged Liberty ships are included. It is of interest to note that of the 2,580 Liberty cargo ships constructed during the war, 268 were lost or declared constructive total losses and sold for scrapping. More than 3,500 tons of scrap is derived from this type of vessel.

The established shipbuilding yards with their full range of equipment are in most cases better able to handle the dismantling of ships as they already have fitting out docks, dry docks, cranes for the lifting of heavy machinery, hydraulic shears, and railway sidings for the hauling away of the scrap. Ship breaking as practiced by some of the firms listed, both in the United States and abroad, is a rather sketchy affair, with the rudest of equipment and with the ship berthed at a rented dock or on a mud flat.

In the period following World War I ship breaking was a prosperous and active industry, so that in the present era history is but repeating itself in the disposal of war-built, war-damaged, and obsolete tonnage. Approximately 1,000 ships were sold for scrapping by the United States Shipping Board after the first world war. One of the largest individual purchasers of these ships was the Ford Motor Company, which acquired 200 cargo ships, mostly "Lakers," scrapped half of them at coastal ports, loaded this scrap into the remaining vessels and towed these to their eventual point of final disposal. Another large scrapping program in the years between the two wars involved the twenty-four capital ships which were scrapped under the naval limitations program after World War I. These ranged from obsolete ships to vessels actually in the process of construction. However, in the era immediately prior to the outbreak of war in Europe in 1939 ship breaking in the United States was not a profitable venture. As a result tremendous quantities of scrap, including many old ships filled with scrap, were exported to Japan, enabling that nation to build up one of its necessary but lacking resources. This was one of the contributing reasons why Japan was able to prepare for war.



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A LOG SURVEY

U. S. SHIPS TRANSFERRED TO FOREIGN FLAG DURING 1948

A continuation of The LOG's exclusive survey on vessel registry transfers.

In the July 1, 1948, Review and Yearbook Number of The LOG there appeared an exclusive survey showing the names, tonnages and the owners of the privately owned documented American flag merchant vessels sold and/or transferred to foreign flag since the end of the war in August, 1945. At that time the vessels transferred totaled 222 of 1,096,450 gross tons and 1,620,627 deadweight tons, and averaging 7,300 tons deadweight. Since then an additional 44 vessels have been sold and/or transferred to foreign registries, these totaling 249,946 gross tons and 352,944 deadweight tons, or a grand total since the end of the war of 266 privately owned merchant vessels of 1,346,396 gross tons and 1,973,571 deadweight tons, made up of 183 cargo ships, 67 tankers, and 16 combination passenger and cargo ships.

These vessels have gone to 27 different national flags. Many were very old, seven having been built prior to 1900, and the great majority had long since reached the obsolescent stage as measured by American standards. A total of 62 had been completed in the years before the shipbuilding program instigated by the United States Shipping Board in 1918, and 241 were 20 years of age or older. Only 25 were under 20 years of age and most of these were not sold, merely being transferred for operation under a foreign flag by their current owners. The 266 vessels transferred now average about 30 years of age and all but a few had long since outlived their usefulness in the American Merchant Marine. As these vessels could have contributed little, if anything, to the national defense, the United States Maritime Commission had no grounds for refusing permission, as required by the 1916 Shipping Act, to transfer the vessels to foreign registries.

Largest of the vessels to go to foreign flag, at a sales price of about $3,250,000, during the past twelve months was the MATSONIA of the Matson Navigation Company. This vessel has been registered in Panama and has been reconditioned at the Cosulich shipyard in Italy for service on the Home Line between the United States and Italy. Another well known combination passenger and cargo vessel transferred from the American flag recently was the coastwise ship GEORGE WASHINGTON, originally constructed for the Old Dominion Line in 1924 for the run between New York and Norfolk. This line was later acquired by the Eastern Steamship Lines. After the war the vessel was purchased by the Alaska Transportation Company and reconditioned for the run between Seattle and Alaska. Following the crippling marine labor strike on the Pacific Coast last fall, the Alaska Transportation Company decided to liquidate and sold the GEORGE WASHINGTON to the French Line, which plans to utilize the ship in the run between France and the West Indies.

The Matson Line also sold five more cargo ships to foreign interests, having previously disposed of nine other obsolete vessels. The Southern Steamship Company sold its entire fleet of six thirty-year old cargo ships to Chinese interests. The Overlakes Freighting Corporation disposed of two more old cargo ships, having previously sold five other forty-year old ships. The Long Island Sound passenger steamer COMET was sold last year to Chinese interests. This vessel had been operated before the war by the Colonial Navigation Company between New York and Providence, having originally been constructed as the CAMDEN for the New England Steamship Company.

Late in the 1930's when it appeared the stage was being set for another European war a considerable demand was created for tonnage of all types. As a result American ship owners were able to sell at favorable prices a large number of their old vessels, most of which were built during World War I by the Shipping Board. This demand continued until the United States was drawn into the war, when all American flag tonnage was requisitioned and further sales were stopped. However, in the period between September 1, 1939, and July 1, 1941, when the sales to foreign flag were ordered discontinued, 267 merchant vessels of 1,443,208 gross tons and over 2,000,000 deadweight tons were transferred to foreign registries. The great majority of these ships were sunk during the war.

With the cessation of hostilities in August, 1945, foreign shipping interests combed the markets for tonnage of any kind and age, offering as much as $50 a deadweight ton for twenty-five year old, 12-knot, cargo ships. This postwar demand for tonnage from every maritime nation of the world has practically cleared out of

TABLE 1

Number and Tonnage of Each Type of Privately Owned Documented American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Foreign Flag Since the End of the War in August 1945.

Type	Number	Gross Tons	Average Gross Tons	Deadweight Tons	Average Deadweight Tons
Passenger and cargo	16	86,144	5,384	64,402	4,025
Cargo	182	837,421	4,601	1,258,486	6,916
Tanker	67	420,511	6,276	648,183	9,674
Carferry	1	2,320	2,320	2,500	2,500
Totals	266	1,346,396	5,061	1,973,571	7,419

Number and Tonnage of Privately Owned Documented American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Foreign Flag Before the War in the Period Between September 1, 1939 and July 1, 1941, When Further Sales Were Stopped by the United States Government.

Number	Gross Tons	Deadweight Tons
267	1,443,208	2,000,000

Number and Tonnage of Warbuilt Merchant Vessels Sold For Foreign Flag Operation by the U. S. Maritime Commission Under the Authority of the Merchant Ship Sales Act of 1946, Each of 1,500 Gross Tons and Over.

Type	Number	Gross Tons	Deadweight Tons
Tankers	216	2,140,212	3,393,360
Cargo	897	5,783,096	8,384,546
Total	1,113	7,923,308	11,777,906

Grand Total of Merchant Vessels Sold and/or Transferred to Foreign Flag.

Number	Gross Tons	Deadweight Tons
1,646	10,712,912	15,751,477

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"SHIP OPERATORS"—

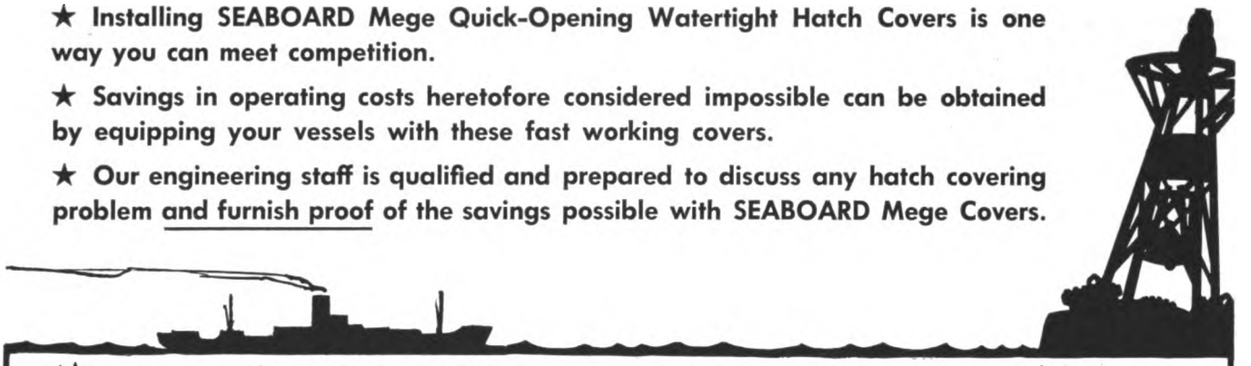
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TABLE 2

Number and Tonnage by Type of Privately Owned Documented American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Each Foreign Flag Since the End of the War in August 1945.

Flag and Type	Number	Gross Tons	Deadweight Tons
Argentina			
Cargo	5	26,779	41,119
Tanker	4	18,567	28,120
Total	9	45,346	69,239
Belgium			
Cargo	1	6,679	9,000
Brazil			
Cargo	2	4,216	5,700
Tanker	1	1,551	2,050
Total	3	5,767	7,750
Canada			
Cargo	12	44,388	63,780
Tanker	3	5,464	8,425
Total	15	49,852	72,205
Chile			
Cargo	4	16,222	23,900
China			
Passenger and cargo	4	11,950	12,827
Cargo	24	76,945	116,408
Tanker	4	30,475	44,600
Total	32	119,370	173,835
Denmark			
Tanker	1	9,153	14,363
Finland			
Tanker	3	20,972	31,200
Cargo	3	12,556	16,700
Total	6	33,528	47,900
France			
Passenger and cargo	1	5,184	3,000
Great Britain			
Cargo	1	2,286	3,350
Tanker	3	3,381	6,000
Total	4	5,667	9,350
Greece			
Cargo	1	2,632	3,500
Honduras			
Cargo	14	68,376	100,908
Carferry	1	2,320	2,500
Tanker	1	6,448	9,859
Total	16	77,144	113,267
Iceland			
Cargo	1	4,723	6,000
Italy			
Passenger and cargo	1	2,472	1,350
Cargo	10	60,824	96,519
Tanker	7	44,907	66,229
Total	18	108,203	164,098
Mexico			
Tanker	3	20,623	31,100
Morocco			
Cargo	1	4,986	8,015
Norway			
Passenger and cargo	1	1,255	1,668
Tanker	2	9,300	14,733
Total	3	10,555	16,401
Panama			
Passenger and cargo	5	50,360	34,257
Cargo	87	441,804	666,076
Tanker	32	235,259	369,891
Total	124	727,423	1,070,224
Peru			
Cargo	1	1,899	1,800
Philippines			
Passenger and cargo	3	9,687	6,700
Cargo	3	8,577	12,700
Total	6	18,264	19,400
Sweden			
Cargo	5	14,614	21,760
Switzerland			
Tanker	2	11,571	17,538
Turkey			
Passenger and cargo	1	5,236	4,600
Cargo	1	3,704	6,500
Total	2	8,940	11,100
Uruguay			
Cargo	1	6,997	10,000
U. S. S. R.			
Cargo	4	21,705	35,751
Venezuela			
Tanker	1	2,840	4,075
Yugoslavia			
Cargo	1	6,509	9,000
Grand Total	266	1,346,396	1,973,571

the American Merchant Marine most of the prewar constructed vessels.

It will be noted from Table 1 that a grand total of 1,646 American flag merchant vessels of 10,712,912 gross tons and 15,751,477 deadweight tons have been sold and/or transferred to foreign registries by private American shipping interests and the United States Maritime Commission. This is equal to a fleet 50 percent larger than that which existed under the American flag prior to the war and has been greatly instrumental in restoring foreign merchant marines to their prewar status in practically every case. As a matter of fact, with the large shipbuilding program in hand at present in European yards covering 1,034 new vessels on January 1, most maritime nations will in the next year or two have merchant marines larger than they had prior to the war.

The 1,113 merchant vessels sold to foreign flag by the Maritime Commission before its authority to do so expired on February 28, 1948, were all warbuilt vessels and, therefore, these vessels are comparatively new, averaging only about five years of age. This is an important factor in the rehabilitation of foreign merchant marines, enabling them to compete with American flag vessels on the same basis and at the same purchase price. It is to be noted, however, that this total includes 589 Liberty ships, but 308 cargo ships of other better types were also sold foreign, including Victory ships and 37 of the Diesel propelled C1 type, together with 216 tankers. These Maritime Commission vessels were transferred to 34 national flags located in all parts of the world. The Maritime Commission sold for American flag operation 656 vessels of 5,233,225 gross tons and 7,862,888 deadweight tons.

The statutory and floor prices set by Congress governing the sale of warbuilt tonnage to American and foreign interests have enabled some of the foreign purchasers to make handsome profits in resales. The Liberty ships SEA TRIUMPH, FINNAMORE HILL and SKIPSEA are re-

TABLE 3

Age of Privately Owned Documented American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Foreign Flag Since the End of the War in August 1945.

Year Built	Cargo Ships	Tankers	Combination Passenger and Cargo Ships	Total
1893	1	..	..	1
1898	2	..	..	2
1899	4	..	..	4
1900	1	..	..	1
1901	4	1	..	5
1902	4	..	..	4
1903	1	1	..	2
1904	2	..	1	3
1905	1	..	..	1
1907	2	..	2	4
1908	2	..	..	2
1909	3	..	..	3
1911	2	..	..	2
1912	..	1	1	2
1913	3	3	1	7
1914	1	1	..	2
1915	..	..	1	1
1916	2	4	..	6
1917	7	3	..	10
1918	23	4	..	27
1919	48	6	..	54
1920	45	12	..	57
1921	13	11	1	25
1923	2	3	2	7
1924	1	..	1	2
1926	2	..	1	3
1927	..	..	2	2
1928	1	..	1	2
1929	..	1	1	2
1930	..	3	..	3
1931	1	1	..	2
1932	..	..	1	1
1936	..	1	..	1
1937	..	1	..	1
1941	..	1	..	1
1944	3	5	..	8
1945	2	4	..	6
Totals	183	67	16	266

TABLE 4

Distribution by Flag of War-Built Merchant Vessels Sold to Foreign Interests by the United States Maritime Commission, Under the Terms of the Merchant Ship Sales Act of 1946, and Titles Transferred up to June 1, 1949.

Flag	Cargo			Tanker			Total		
	No.	Gross Tons	Deadweight Tons	No.	Gross Tons	Deadweight Tons	No.	Gross Tons	Deadweight Tons
Argentina	21	147,447	207,065	3	9,706	12,150	24	157,153	219,215
Belgium	14	104,806	149,269	1	10,296	16,287	15	115,102	165,556
Brazil	12	45,676	63,534	...	.....	.....	12	45,676	63,534
Canada	...	.....	.....	8	82,983	131,201	8	82,983	131,201
Chile	6	32,466	46,963	...	.....	.....	6	32,466	46,963
China	33	168,990	214,479	...	.....	.....	33	168,990	214,479
Colombia	8	30,434	43,188	...	.....	.....	8	30,434	43,188
Cuba	4	15,214	23,797	...	.....	.....	4	15,214	23,797
Denmark	19	129,344	177,601	...	.....	.....	19	129,344	177,601
Egypt	2	14,354	4,732	...	.....	.....	2	14,354	4,732
Finland	3	16,222	23,758	...	.....	.....	3	16,222	23,758
France	80	561,604	827,531	18	186,256	296,653	98	747,860	1,124,184
Great Britain	167	1,034,742	1,540,235	51	527,230	836,828	218	1,561,972	2,377,063
Greece	100	712,457	1,044,595	7	72,874	115,569	107	785,331	1,160,164
Honduras	28	191,308	283,572	...	.....	.....	28	191,308	283,572
Iceland	1	3,805	6,013	...	.....	.....	1	3,805	6,013
India	15	110,129	157,873	...	.....	.....	15	110,129	157,873
Iran	1	7,134	10,384	...	.....	.....	1	7,134	10,384
Italy	103	697,416	1,023,545	20	306,057	331,139	123	903,473	1,354,684
Netherlands	72	489,526	697,511	12	74,636	110,038	84	564,162	807,549
New Zealand	2	11,909	16,287	...	.....	.....	2	11,909	16,287
Nicaragua	2	3,665	5,600	...	.....	.....	2	3,665	5,600
Norway	85	515,620	742,599	17	175,537	279,887	102	691,157	1,022,486
Pakistan	1	7,133	10,384	...	.....	.....	1	7,133	10,384
Panama	75	518,326	759,035	72	736,279	1,172,896	147	1,254,605	1,931,931
Peru	8	34,187	49,792	...	.....	.....	8	34,187	49,792
Philippines	6	28,645	41,703	...	.....	.....	6	28,645	41,703
Poland	1	7,612	10,719	...	.....	.....	1	7,612	10,719
Portugal	3	5,662	8,343	...	.....	.....	3	5,662	8,343
Sweden	6	29,641	41,188	...	.....	.....	6	29,641	41,188
Turkey	8	34,168	46,795	2	13,710	20,848	10	47,878	67,643
Union of S. Africa	7	51,576	73,732	2	20,896	33,353	9	72,472	107,085
Uruguay	4	21,878	32,724	2	20,592	32,586	6	42,470	65,310
Venezuela	...	.....	.....	1	3,160	3,925	1	3,160	3,925
Totals	897	5,783,096	8,384,546	216	2,140,212	3,393,360	1,113	7,923,308	11,777,906

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ported to have changed hands at prices between 185,000 and 200,000 pounds, netting the owners a gross profit of almost 50 percent. The Panama flag Liberty ship JULES FRIBOURG is reported to have been sold at a price of $740,000, netting a profit of about $200,000. The ARGENTINE VICTORY and PATAGONIA VICTORY, registered in Panama, were sold to Dutch interests at about $1,650,000 each. The Maritime Commission floor price for Victory ships of this type was about $880,000. The ALPHA LIMPOPO, ex HADLEY, a T2 tanker purchased from the Commission by the Alpha South African Steamship Company, was reported resold to other foreign buyers for approximately 800,000 pounds, for a gross profit of about 300,000 pounds. This same company sold the Liberty ships ALPHA MOOI and ALPHA VAAL at a profit of 50,000 to 70,000 pounds each.

These kind of profits are denied to American ship owners in connection with the ships they purchased because of the great number of ships still in the Reserve Fleets available for sale to American citizens only at the statutory and floor prices, and, also, because of the difficulty involved in transferring to foreign flag warbuilt ships they have purchased. As mentioned before, the Commission's authority to sell warbuilt ships to foreign interests expired early in 1948, but with 1,113 of these vessels now under foreign flag no doubt many re-sales have already been consummated by the foreign purchasers, especially in cases where they paid the Commission the full purchase price in cash. In selling these vessels to foreign interests, the Commission accepted mortgages in the huge amount of $229,001,030, of which $22,882,764, including credits, have been repaid.

Sales to Greece

It is of particular interest to note that only one of the privately owned American flag vessels sold abroad since the end of the war went to Greek registry. This is in direct contrast to the situation in the years before the war when Greek ship owners purchased a considerable number of 20 and 30 year old cargo ships, principally from British owners. One of the contributing reasons for this is the fact that a number of former Greek ship owners are now in England and in the United States operating as American citizens and as such have acquired many new warbuilt merchant vessels from the Commission at the favorable prices set by Congress. Another reason is that soon after the war the warbuilt ships were made available to Greek ship owners and other nationalities through the medium of the Merchant Ship Sales Act of 1946. As a result the Greek government and Greek ship owners purchased from the Commission 107 vessels of 785,331 gross tons and 1,160,164 deadweight tons. This in a great measure restored the Greek merchant marine which during the war was practically eliminated due to sinkings. On January 1, 1949, there existed under the Greek flag 222 vessels of 1,264,700 gross tons and 1,945,700 deadweight tons, of which 201 were cargo ships, 12 were tankers, and 9 were combination passenger and cargo ships.

Transfers to Panama Flag

Privately owned American flag ships sold and/or transferred to Panama flag since the end of the war total 124 of 727,423 gross tons and 1,070,224 deadweight tons. In addition, 147 Maritime Commission warbuilt ships were sold and transferred to Panama registry, these totaling 1,254,605 gross tons and 1,931,931 deadweight tons. A total of 271 former American flag vessels have thus been registered in Panama since the end of the war, these representing 3,000,000 tons deadweight, and including 104 tankers, 5 combination passenger and cargo ships, and 162 cargo ships. However, not only American flag vessels have been transferred to Panama registry. Vessels from many other nations have also been documented in Panama. For instance, since the end of the war 39 British vessels of 135,907 gross tons and over 200,000 tons deadweight have gone to Panama, most of which is old tonnage. As of January 1, 1949, there existed under Panamanian registry 434 vessels of 2,739,600 gross tons and 4,149,900 deadweight tons, of which 181 were tankers, together with 234 cargo ships and 19 combination passenger and cargo ships.

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LOG Report on A. B. S. Technical Activities

(Continued from Page 138)

Vessels Classed With the Bureau

There now exist in class with the American Bureau of Shipping 9,010 vessels of 38,874,129 gross tons, of which about 20 percent are temporarily inactive. To this figure there will be added 227 vessels of 1,157,968 gross tons currently under construction in American and foreign shipyards, making a grand total of 9,233 vessels of 40,024,410 gross tons. More than 20,000,000 horsepower of propulsion machinery is utilized in these vessels. While a good percentage of these vessels are foreign owned and/or registered, the large majority fly the American flag. These figures include seagoing tonnage, Great Lakes and river craft, both self-propelled and non-propelled.

TABLE 5

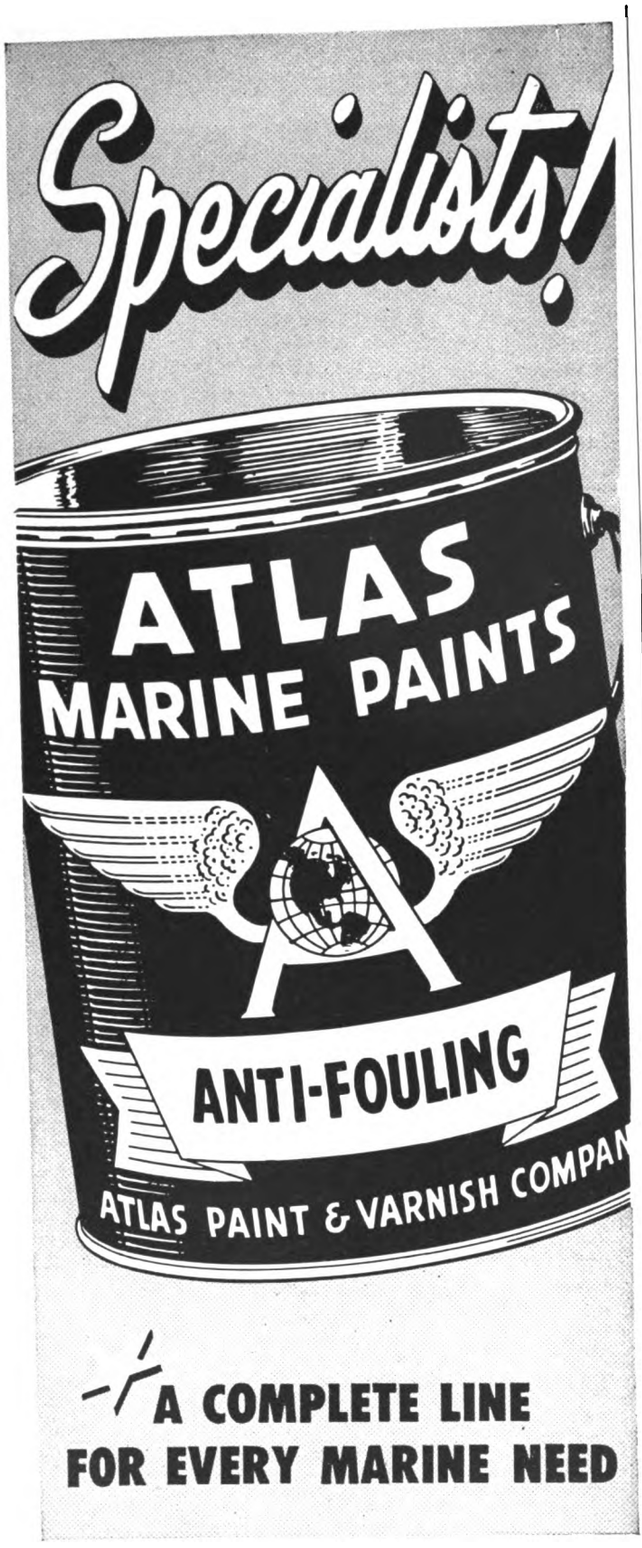
Documented Privately Owned American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Foreign Flag Since End of the War in August 1945 (Continued from July 1, 1948, Review and Yearbook Number of The LOG).

Name	Year Built	Type	Gross Tons	Dead Weight Tons	Flag Transferred To
Alaska Transportation Co.					
George Washington	1924	Passenger	5,184	3,000	France
Colonial Navigation Co.					
Comet, ex Camden	1907	Passenger	2,153	1,800	China
Columbia River Packers Association					
Saipan	1945	Cargo	3,506	3,776	Honduras
Tinian	1945	Cargo	3,393	3,700	Honduras
Eastern Gas and Fuel Associates					
A. L. Kent	1920	Collier	6,030	9,600	Panama
Erie and St. Lawrence Corp.					
Alden Barnes Fiertz	1921	Cargo	1,040	1,580	Canada
Federal Motorship Corp.					
Mosoil	1920	Tanker	7,641	10,254	Panama
Inland Steel Co.					
The Inland	1926	Bulk Cargo	1,694	2,700	Panama
Luckenbach S. S. Co.					
Nira Luckenbach	1919	Cargo	5,029	7,825	Panama
J. L. Luckenbach	1919	Cargo	8,582	12,000	Panama
Matson Navigation Co.					
Mahimahi	1921	Cargo	7,350	10,970	Italy
Manulani	1921	Cargo	9,556	12,000	Panama
Manukai	1921	Cargo	9,547	14,500	Panama
Maunalei	1921	Cargo	7,159	10,084	Italy
Mokihana	1921	Cargo	7,460	10,981	Panama
Matsonia	1927	Passenger	17,226	5,500	Panama
Mexico Shipping & Trading Co.					
Veracruz	1917	Tanker	6,958	10,100	Mexico
Overlakes Freighting Corp.					
C. T. Jaffray	1902	Cargo	4,163	6,000	Sweden
W. J. Connors	1901	Cargo	4,723	6,000	Iceland

TABLE 5—Continued

Name	Year Built	Type	Gross Tons	Dead Weight Tons	Flag Transferred To
National Bulk Carriers					
Petrofuel	1941	Tanker	7,294	12,230	Panama
Panormetis S. S. Co.					
Isle of Patmos	1919	Cargo	2,592	4,050	Panama
Prudential S. S. Co.					
Eastern Guide	1919	Cargo	3,704	6,500	Turkey
Richfield Oil Corp.					
Kekoskee	1920	Tanker	5,193	7,540	Panama
Agwiworld	1921	Tanker	6,771	11,268	Panama
Manuel Rodriguez Trading Corp.					
Capitan	1945	Tanker	3,102	5,000	Argentina
Sugarland	1945	Tanker	3,210	5,000	Argentina
Sabine Transportation Co.					
Henry M. Dawes	1916	Tanker	4,710	7,573	Panama
Saginaw Dock & Terminal Co.					
Atlantic Trader	1918	Cargo	2,241	3,500	China
Southern S. S. Co.					
City of Fort Worth	1919	Cargo	2,606	4,100	China
City of Houston	1919	Cargo	2,609	4,100	China
City of Philadelphia	1919	Cargo	2,674	4,100	China
San Antonio	1920	Cargo	2,689	4,050	China
West Texas	1920	Cargo	2,686	4,120	China
Wichita Falls	1920	Cargo	2,559	4,050	China
Standard Fruit & S. S. Co.					
Teapa	1919	Refrig.Cargo	1,184	500	Honduras
Standard Oil Co. of California					
D. C. Scofield	1916	Tanker	8,640	12,638	Panama
W. S. Miller	1920	Tanker	6,984	10,200	Panama
Standard Oil Co. of N. J.					
Esso Providence	1921	Tanker	9,060	13,800	Panama
John D. Archbold	1921	Tanker	12,591	22,600	Panama
G. Harrison Smith	1930	Tanker	11,752	20,300	Panama
W. S. Farish	1930	Tanker	11,787	20,615	Panama
Sun Oil Co.					
Pacific Sun	1929	Tanker	9,096	14,540	Panama
West India Fruit & S. S. Co.					
Vanda	1928	Cargo	1,250	1,500	Honduras
Wilson Transit Co.					
S. H. Robbins	1899	Cargo	4,568	6,700	Canada

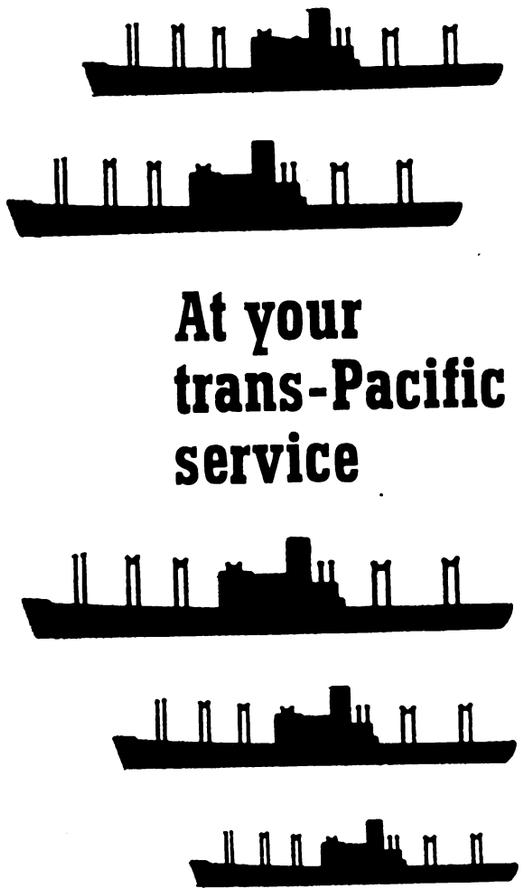
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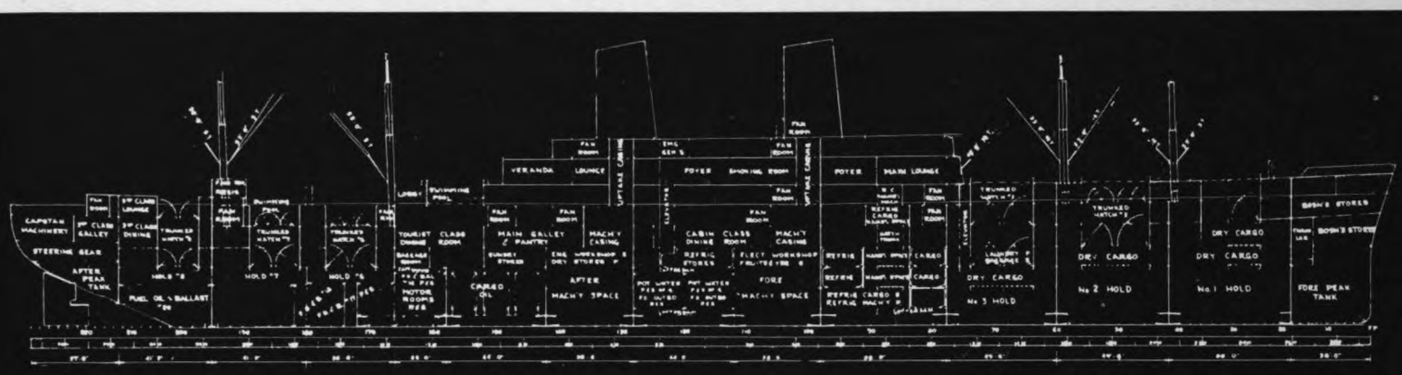
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P2-SE2-R3 SS PRESIDENT CLEVELAND

DIMENSIONS AND DATA

609'-5¾"	LENGTH OVERALL
590'-0"	LENGTH ON 29'-0" D.W.L.
573'-0"	LENGTH BETWEEN PERPS
78'-6"	BREADTH MOLDED
79'-6"	BREADTH EXTREME
61'-6"	DEPTH MOLDED TO PROMENADE DECK (AT SIDE)
52'-6"	DEPTH MOLDED TO UPPER DECK
43'-6"	DEPTH MOLDED TO 'A' DECK
34'-6"	DEPTH MOLDED TO 'B' DECK
26'-0"	DEPTH MOLDED TO 'C' DECK
30'-1⅞"	MEAN DRAFT TO SUBDIVISION W.L. (S.W.)
23507	DISPLACEMENT TO SUBDIVISION W.L. (S.W.)

BOILERS - COMBUSTION ENGINEERING CO. ——— (DESIGN) 675# PRESS.
MAIN TURBO GENERATORS - GENERAL ELECTRIC (2) TOTAL 18000 S.H.P.
AUX ELEC GENERATORS - GENERAL ELECTRIC (500 KW 440 A.C.) & (200 KW 240 D.C.)
NO. OF SCREWS 2
PROPELLERS - SOLID, 3 BLADES, 18'-3" DIA, 19.44' PITCH
SPEED DESIGNED ——— 19 KNOTS
REFRIGERATING PLANT FREON FRICK CAPACITY 26 & 70 TONS
WINCHES - LAKE SHORE ENG. CO, DBL. SP — 10 SGL. DRUM AND 6 DBL. DRUM ELECTRIC
WINDLASS - LIDGERWOOD ——— ELECTRIC
STEERING GEAR - LIDGERWOOD ——— ELECTRO-HYDRAULIC
WARPING CAPSTANS 8 LIDGERWOOD ——— ELECTRIC
BOOMS ——— (8) 10-TON, (8) 5 TON

TRUNKED CARGO HATCHES

COMPARTMENT				NET CAP CU. FT.	LOCATION OF C.G. ABOVE BL	LOCATION OF C.G. FROM ⊠
No 1 HOLD	A DK	TO PROM DK		3958	55.9'	230.2F
2	B	UPPER		13456	44.6'	180.7F
2	UPPER	PROM		7064	59.5'	180.6F
3	C DK	A		11201	35.5'	123.8F
3	A	PROM		13715	49.5'	129.4F
6	C	A		6838	35.4'	157.3A
6	A	UPPER		4089	48.4'	157.3A
7	C	A		8962	55.5'	189.2A
8	C	A		5619	36.9	251.0A
8	A	UPPER		2023	52.1	231.0A
		TOTAL		78405	43.73'	29.19F

FUEL OIL & SALT WATER

LOCATION OF C.G.(FT) ABOVE BL	LOCATION OF C.G.(FT) FROM ⊠	COMPARTMENTS				FUEL OIL BARRELS	FUEL OIL TONS	S.W. TONS @ 35#
15.5	273.7F	FORE PEAK TANK			STEM - FR 18			187.80
2.8	227.3F	DBL BOTTOM TANK	1	FRS	18 - 42	626.9	94.33	103.69
2.8	177.1F	" " "	2P	"	42 - 60	559.7	83.81	91.91
2.8	177.1F	" " "	2S	"	42 - 60	555.7	83.81	91.91
2.5	129.7F	" " "	3S	"	60 - 78	1020.8	153.96	168.83
3.1	128.0F	" " "	3P	"	60 - 78	325.6	49.11	53.86
3.1	128.0F	" " "	3S	"	60 - 78	325.6	49.11	53.86
2.5	77.7F	" " "	4S	"	78 - 98	1120.0	168.92	185.23
2.9	79.4F	" " "	4P	"	78 - 98	663.0	100.29	109.99
2.9	75.4F	" " "	4S	"	78 - 98	665.0	100.29	109.99
2.5	30.8F	" " "	5S	"	98 - 112	798.6	120.44	132.09
2.8	30.5F	" " "	5P	"	98 - 112	599.1	90.36	99.09
2.8	30.5F	" " "	5S	"	98 - 112	599.1	90.36	99.09
2.5	10.6A	" " "	6S	"	112 - 128	901.6	135.98	149.11
2.8	10.3A	" " "	6P	"	112 - 128	719.0	108.44	118.92
2.8	10.3A	" " "	6S	"	112 - 128	719.0	108.44	118.92
14.1	0.4F	F.O. SETTLING TANK	11P	FRS	112 - 120	670.5	101.12	
14.1	0.4F	" " "	11S	"	112 - 120	670.5	101.12	
14.1	21.4A	" " "	14P	"	120 - 128	670.5	101.12	
14.1	21.4A	" " "	14S	"	120 - 128	670.5	101.12	
14.1	0.5F	F.O. DEEP TANK	12P	"	112 - 120	1076.4	162.34	
14.1	0.5F	" " "	12S	"	112 - 120	1076.4	162.34	
14.1	21.5A	" " "	15P	"	120 - 128	1074.0	161.98	
14.1	21.5A	" " "	15S	"	120 - 128	1074.0	161.98	
2.3	51.8A	DBL. BOTTOM TANK	7S	FRS	128 - 142	799.1	120.52	132.17
2.9	51.0A	" " "	7P	"	128 - 142	564.4	85.12	93.34
2.9	51.0A	" " "	7S	"	128 - 142	564.4	85.18	93.34
2.5	92.9A	" " "	8S	"	142 - 158	912.6	137.64	150.94
3.0	90.1A	" " "	8P	"	142 - 158	415.0	62.59	68.62
3.0	90.1A	" " "	8S	"	142 - 158	415.0	62.59	68.62
3.2	138.4A	" " "	9P	"	158 - 172	488.0	73.60	80.71
3.1	138.4A	" " "	9S	"	158 - 172	486.8	73.42	80.52
17.6	125.4A	F.O. DEEP TANK	16P	FRS	158 - 166	637.0	96.07	105.35
17.6	125.4A	" " "	16S	"	158 - 166	637.0	96.07	105.35
13.9	154.9A	" " "	17P	"	166 - 180	828.2	124.91	136.97
13.9	154.9A	" " "	17S	"	166 - 180	828.2	124.91	136.97
9.7	166.9A	" " "	18S	"	174 - 182	1062.1	160.18	175.66
11.3	205.3A	" " "	19S	"	182 - 195	1955.7	294.95	323.46
12.7	231.2A	" " "	20S	"	195 - 213	1021.5	154.06	168.94
23.8	248.2A	AFTER PEAK TANK			213 - STERN			112.40
7.99	31.7A				TOTAL	28794.5	4342.74	3907.69

FRESH WATER

COMPARTMENT				GALLONS	TONS @ 36#	LOCATION OF C.G.(FT) ABOVE BL	LOCATION OF C.G.(FT) FROM ⊠
DEEP TANK (POTABLE WATER)	"10P	FRS.	112-120	26098	96.91	15.5	0.5F
" " "	"10S	"	112-120	26098	96.91	15.5	0.5F
" " "	"13P	"	120-128	26098	96.91	15.5	21.5A
" " "	"13S	"	120-128	26098	96.91	15.5	21.5A
			TOTAL	104392	387.64	15.5	10.50A

DRY CARGO

COMPARTMENT					GRAIN CU. FT	BALE CU FT	LOCATION OF C.G.(FT) ABOVE BL	LOCATION OF C.G.(FT) FROM ⊠
No 1 HOLD	DBL BOT	TO C.D.	FRS	18-42	23588	18775	15.8	227.0F
1	C DK	B	"	18-42	10506	8438	30.5	227.1F
1	B	A		18-36	11057	9553	40.6	237.2F
2	DBL BOT	C	"	42-60	41974	36743	15.9	177.5F
2	C DK	B	"	42-60	16461	14302	30.3	178.3F
3	DBL BOT	D	"	60-78	32461	27422	11.8	128.7F
3	D DK	C	"	60-78	20855	18482	21.5	124.1F
6	D.T. TOP	C	"	166-180	15989	13144	22.6	155.0A
7	"	"	"	180-195	16211	13368	22.2	194.2A
8	"	"	"	195-213	8623	7121	22.3	233.3A
STRONG ROOM	C DK		"	60-64.5	1085	962	30.5	149.1F
SPECIAL CARGO	D		"	60-64	5217	4379	21.5	148.9F
				TOTAL	203007	174389	20.63	100.09F

SHIPS DRY STORES & MISC.

COMPARTMENT					NET CAP CU. FT	LOCATION OF C.G.(FT) ABOVE BL	LOCATION OF C.G.(FT) FROM ⊠
ENGINEER'S STORES	P	C DK	FRS	142-150	2525	30.1	79.7A
DRY STORES	P	"	"	136-142	2520	30.1	62.7A
"	S	"	"	142-148	1375	30.1	77.2A
SAILORS' STORES	&	"	"	142-148	2041	30.1	79.2A
FLOUR ROOM	P	"	"	142-145	287	30.7	75.3A
BAGGAGE ROOM	S	"	"	60-78	2467	29.9	125.5F
" (TOURIST CLASS)	&	"	"	161-166	2421	30.0	128.9A
CLEAN LINEN	P	"	"	72-78	1512	29.9	115.0F
BOILER	P	"	"	76-78	864	30.0	108.1F
DRY STORES (3RD CLASS)	P	B	"	213-219	1038	42.4	243.2A
LINEN ISSUANCE ROOM	S	"	"	57-60	589	38.9	138.2F
BOSN'S STORES	&	"	STEM	FR 18	2634	42.0	279.5A
"	"	A	"	18	5462	52.2	275.1F
"	"	UPPER DK	"	6	2181	61.1	278.5F
				TOTAL	31514	37.63	87.29F

REFRIGERATED CARGO

COMPARTMENT					NET CAP CU FT	LOCATION OF C.G.(FT) ABOVE BL	LOCATION OF C.G.(FT) FROM ⊠
REFRIG. COMPARTMENT	"1 P	C DK	TO B DK	FRS 78-84	2413	30.1	96.6F
"	"2 S	"	"	78-89	5901	30.0	91.6F
"	"3 P	"	"	84-98	4012	29.9	67.4F
"	"4 &	"	"	91-98	1420	30.1	59.6F
"	"5 P D.	"	C.	78-84	2481	21.3	97.6F
"	"6 S	"	"	78-84	2481	21.3	97.6F
"	"7 P	"	"	84-91	1951	21.5	80.1F
"	"8 S	"	"	84-91	2035	21.5	80.1F
"	"9 P	"	"	91-98	2851	21.4	56.6F
"	"10 S	"	"	91-98	3019	21.5	55.8F
"	"11 P & S "E"	D	"	78-86	2863	12.6	93.1F
"	"12 S	"	"	78-84	2152	12.7	96.4F
"	"13 S	"	"	84-98	5361	12.7	72.6F
				TOTAL	33032	22.21	80.33F

SHIPS REFRIGERATED STORES

COMPARTMENT					INSIDE OF BATTENS, COILS, GRATING ETC. CU FT	LOCATION OF C.G.(FT) ABOVE BL	LOCATION OF C.G.(FT) FROM ⊠
DAIRY	C DK	TO B DK	P	FRS 124-128	970	30.3	26.4A
MEATS	"	"	P	" 112-124	4259	30.3	5.2A
POULTRY	"	"	&	" 112-117	1817	30.3	3.8F
FRUIT & VEG	"	"	S	" 98-112	2968	30.3	29.7F
	"	"	S	" 112-121	2169	30.3	0.2A
FISH	"	"	S	" 117-121	596	30.3	8.3A
ICE CREAM	"	"	S	" 121-124	262	29.9	17.6A
ICE STORAGE	"	"	S	" 121-124	346	30.3	17.8A
THAW ROOM	"	"	P	" 117-124	1131	30.1	11.3A
WINE	"	"	"	128-132	1169	30.3	49.0A
REFRIG SPACE &	A		P	" 213-216	217	42.2	275.0A
"	"		P	136-139	781	39.1	58.9A
				TOTAL	16168	30.59	7.12A

CARGO OIL

COMPARTMENT		GALLONS	TONS @ 40#	LOCATION OF C.G.(FT) ABOVE BL	LOCATION OF C.G.(FT) FROM ⊠
DEEP TANK	1 P FRS 143-147	39538	132.21	15.9	19.3A
"	2 S " 143-147	39558	132.21	15.9	19.3A
"	3 P " 148-152	57165	124.21	15.9	93.0A
"	4 S " 148-152	57165	124.21	15.9	93.0A
"	5 P " 183-187	37644	124.48	16.2	116.7A
"	5 S " 183-187	37644	124.48	16.2	116.7A
TOTAL	153-187	227114	760.80	16.0	95.9A

PASSENGER ACCOMMODATIONS

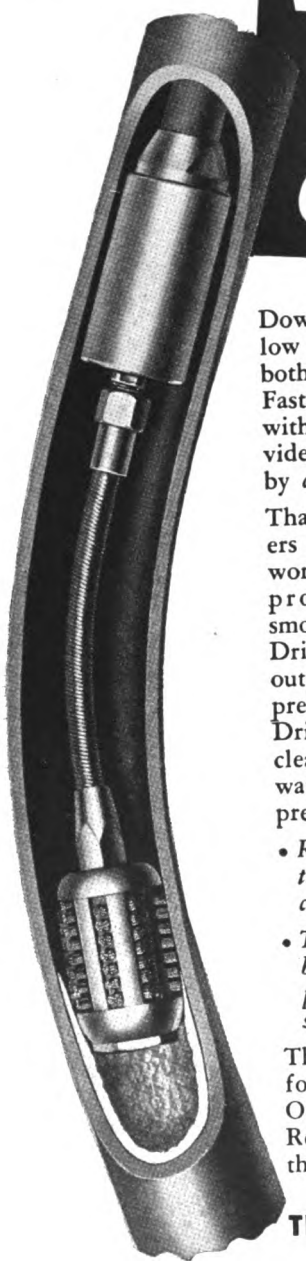
	UPPER	A	B	C	TOTAL
CABIN CLASS			52	27	79
THIRD CLASS					64
TOURIST CLASS		31	41	41	220
		15	25	21	220
					132
		46	66	62	352
		30	2	4	36
		19	29	93	141
			19	49	68
					136

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less turn-around time



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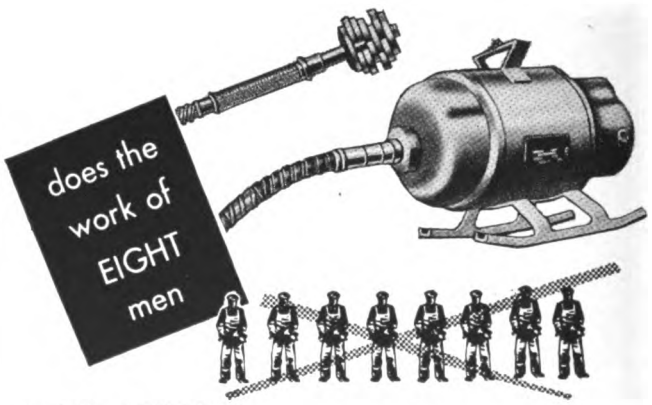
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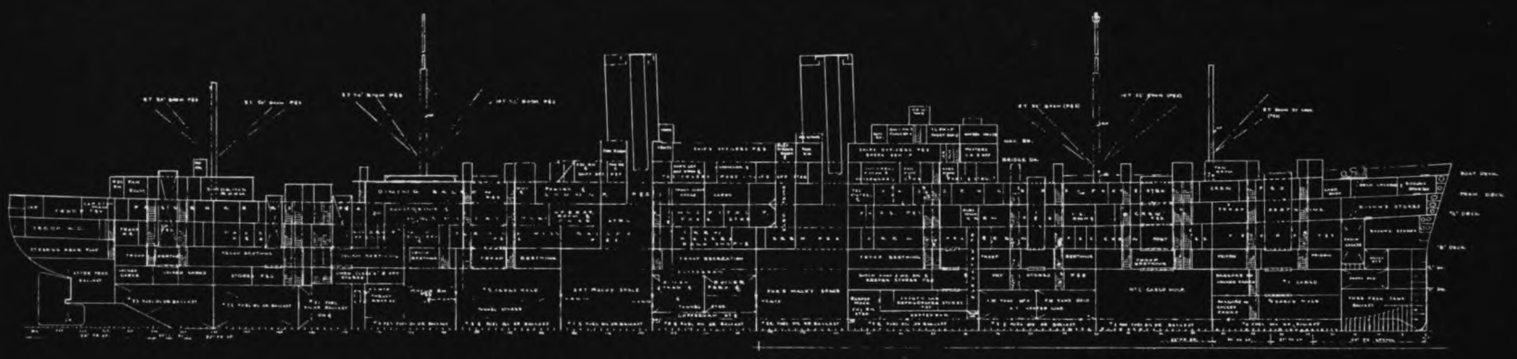
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P2-SE2-R1 U.S.A.T. Admiral Class

DIMENSIONS & DATA

BUILDER - BETHLEHEM STEEL CO SHIPBUILDING DIV
U.S.M.C. TYPE P2-SE2-R1

LENGTH OVERALL	608'-11"
LENGTH BETWEEN PERPENDICULARS	535'-0"
LENGTH AT D.W.L. (29'-0")	590'-0"
BREADTH MOLDED	75'-6"
DEPTH MOLDED TO PROMENADE DK (AT SIDE)	32'-6"
"A" DK	43'-6"
"B" DK	39'-6"
"C" DK	26'-0"

BOILERS - COMBUSTION ENG'G CO (DESIGN) 675# PRESSURE
MAIN TURBO GENERATORS - G.E. (2) - TOTAL S.H.P. 18,000
AUX ELECTRIC - G.E. (4) 200 KW - 240 D.C., (8) 500 KW - 440 A.C.
PROPELLERS (2) - SOLID 3 BLADES, 18'-3" DIA., 19.44' PITCH
SPEED - DESIGNED 20.8 KNOTS
REFRIGERATING PLANT - FREON FRICK CAPACITY 268 TONS

BOOMS - (10) 5 TON, (4) 10 TON
FUEL CONSUMPTION (ESTIMATED) 850 BBLS/DAY
MAKE-UP FEED (ESTIMATED) 30 TONS/DAY
EST CRUISING RADIUS BASED ON FUEL CONSUMPTION - 30 DAYS OR 14,500 N MILES
EST CRUISING RADIUS BASED ON FRESH WATER TANKAGE - (CONSUMPTION 150 TONS/DAY) - 11 DAYS
EST CRUISING RADIUS BASED ON DRY STORES - 60 DAYS
EST CRUISING RADIUS BASED ON REFRIG STORES - 60 DAYS
BREADTH EXTREME (AT DOCKING BRIDGE)
GROSS TONNAGE - U.S. -
NET TONNAGE - U.S. -
HEIGHT (KEEL TO TOP OF MAST)

DRY CARGO

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT	BALE CU. FT.
92	238.7 F	HOLD #1 - DBL. BOT. TO "D" DECK - FR. 18-34	3,700
197	238.7 F	HOLD #1 - "D" DECK TO "C" DECK - FR. 18-34	5,250
158	177.4 F	HOLD #2 - DBL. BOT. TO "C" DECK - FR. 42-60	36,733
389	180.1 F	TRUNKED HATCH #2 - "B" DECK TO "A" DECK - FR. 48-53	3,030
487	180.1 F	- "A" DECK TO PROM. DECK - FR. 48-53	2,700
585	180.1 F	PROM. DK. TO BOAT DK. - FR. 48-53	3,120
177	32.7 A	HOLD #5 - DBL. BOT. TO "C" DECK - FR. 142-158	49,200
		TOTAL	103,733

BAGGAGE OR LOCKED CARGO

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT	CU. FT.
92	214.0 F	HOLD FR. 34-42	3,100
193	213.6 F	"D" DECK FR. 34-42	4,350
215	236.2 A	"D" DECK FR. 195-213	6,800
		TOTAL	14,250

FUEL OIL OR SALT WATER

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT		FUEL OIL BARRELS	FUEL OIL TONS	S.W. TONS
155	233.7 F	FORE PEAK TANK	STORM TO FR. 18	—	—	182.80
78	227.3	DBL. BOTTOM TANK #1	FR. 18-42	626.9	94.55	103.69
28	177.1	#2P	42-60	555.7	83.81	91.91
28	177.1	#2S	42-60	555.7	83.81	91.91
25	129.7	#3 ℄	60-78	1020.8	153.95	168.83
64	128.0	#3P (INCL. SIDE TANK TO D.B.)	60-78	625.4	94.31	103.43
64	128.0	#3S (" " " ")	60-78	625.4	94.31	103.43
25	77.7	#4 ℄	FR. 78-98	1120.0	168.90	185.23
29	75.4	#4P	78-98	665.0	100.29	109.98
29	75.4	#4S	78-98	665.0	100.29	109.98
25	30.8	#5 ℄	98-112	798.6	120.44	132.09
28	30.5	#5P	98-112	599.1	90.35	99.09
28	30.5	#5S	98-112	599.1	90.35	99.09
25	10.6 A	#6 ℄	112-128	901.6	135.97	149.11
28	10.3 A	#6P	112-128	719.0	108.43	118.92
28	10.3 A	#6S	112-128	719.0	108.43	118.92
141	0.4 F	FO SETTLING TANK #4P	112-120	670.5	101.11	—
141	0.4 F	#4S	112-120	670.5	101.11	—
141	21.4 A	#17P	120-128	670.5	101.11	—
141	21.4 A	#17S	120-128	670.5	101.11	—
140	0.5 F	FO DEEP TANK #15P	112-120 (OVERFLOW)	714.7	107.78	—
141	0.5 F	#15S	112-120 (")	1076.4	162.33	—
141	21.5 A	#18P	120-128	1074.0	161.97	—
141	21.5 A	#18S	120-128	1074.0	161.97	—
25	51.8	DBL. BOTTOM TANK #16	128-142	1031	120.52	132.17
29	51.0	#7P	128-142	564.4	85.11	93.34
29	51.0	#7S	128-142	564.4	85.11	93.34
25	92.9	#8 ℄	142-158	912.6	137.65	150.94
30	90.1	#8P	142-158	415.0	62.58	68.63
30	90.1	#8S	142-158	415.0	62.58	68.63
32	132.4	#9P	158-172	488.0	73.60	80.71
31	132.4	#9S	158-172	486.8	73.42	80.52
97	166.9	DEEP TANK #21	179-182	1062.1	160.17	175.66
113	205.9	#22	182-195	1955.7	294.94	323.46
127	231.2	#23	195-213	1021.5	154.07	168.94
252	272.04	AFTER PEAK TANK	213 TO STERN			90.00
			TOTAL	26102.0	3936.41	4319.25

FRESH WATER

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT		GALLONS	TONS @ 36
110	142.1 F	DEEP TANK (WASH WATER) #10	FR. 60-69	54754	203.33
110	117.4	#11 ℄	69-78	54754	203.33
114	128.0	#12P	60-78	56122	208.42
114	128.0	#12S	60-78	56122	208.42
155	0.5	(POTABLE WATER) #13P	117-120	26098	96.92
163	0.5	#13S	112-120	20355	75.59
155	21.5 A	#16P	120-128	26098	96.92
163	21.5	#16S	120-128	21170	78.62
178	125.4	(WASH WATER) #19P	158-166	33234	123.42
178	125.4	#19S	158-166	33234	123.42
140	154.9	#20P	166-180	35860	133.17
140	154.9	#20S	166-180	35860	133.17
		(WASH WATER) TOTAL		359940	1336.68
		(POTABLE WATER) TOTAL		93719	348.05
		GRAND TOTAL		453659	1684.73

DIESEL OIL

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT	BARRELS	TONS
140	0.5 F	DIESEL OIL TANK - PORT FR. 112-120	1579	478.5

FIXED BALLAST

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT	TYPE	TONS
8.25	93.4 A	AFTER PEAK TANK HOLD #5	RAVING STONE	675
180	268.4 A		PIG IRON	150
		TOTAL		825

STEWARD'S STORES

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT		BALE CU. FT.
207	129.7 F	STWD'S DRY STORES	"D" DK. FR. 66-78	16,900
217	144.7 A	CLEAN LINEN	166-171½ (S)	3,800
217	144.7	SOILED LINEN	166-171½ (P)	3,800
217	166.4	DRY STORES	171½-180 (P)	3,300
217	166.4	CLASS "A" STORES	171½-180 (S)	3,300
212	189.2	CLASS "A" STORES	180-189 (S)	2,500
118	76.8 F	POTATO STOWAGE HOLD	84-91 (S)	756
		TOTAL		34,356

MISCELLANEOUS STORES

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT		BALE CU. FT.
212	189.2 A	PX STORES	"D" DECK - FR. 180-189 (P)	2,500
212	209.9 A	PX STORES	189-195 (P)	2,500
212	211.2 A	SPECIAL SERVICE STORES	189-195 (S)	1,200
212	209.9 A	MEDICAL STORES	189-195 (S)	1,650
		TOTAL		7,850

REFRIGERATED STORES

LOCATION OF C.G. (FT) ABV. B.L.	FROM ⊄	COMPARTMENT		CU. FT.
126	85.4 F	STWD'S CHILL - FRUIT & VEGETABLES HOLD	FR. 78-91 (P)	5,896
125	83.1	STWD'S CHILL - FRUIT & VEGETABLES	78-93 (S)	14,253
214	84.1	STWD'S FREEZER - MEAT "D" DK	78-91 (P)	1,439
213	97.8	- FISH	78-85 (P)	857
213	92.3	- DAIRY	78-87 (S)	2,811
213	85.8	THAW ROOM	85-87 (P)	783
213	68.1	STWD'S FREEZER - MILK	87-98 (S)	2,869
213	60.1	- MEAT	91-98 (P)	3,859
213	59.6	- ICE CREAM	91-98 (S)	990
		TOTAL		26,737

NOTE - CAPACITIES OF REFRIG SPACES ARE TO INSIDE OF BATTENS, COILS, GRATINGS, ETC.

NOTES:
ALL L.C.G.'S ARE TAKEN FROM THE D.W.L. MIDSHIP POINT, 6' AFT FR. 116
OIL TANK CAPACITIES ARE FOR 97% FULL TANKS.
WATER TANK CAPACITIES ARE FOR 100% FULL TANKS.

ACCOMMODATIONS

DECK		PASSENGER BERTHS	TROOP BERTHS
BOAT DECK			
PROMENADE DECK			
"A" DECK			
"B" DECK			
"C" DECK (INCL. 48 BERTHS IN PRS. GUNNER RM.)		41	
		106	
		267	
		84	
TOTALS		498	1242
			1242

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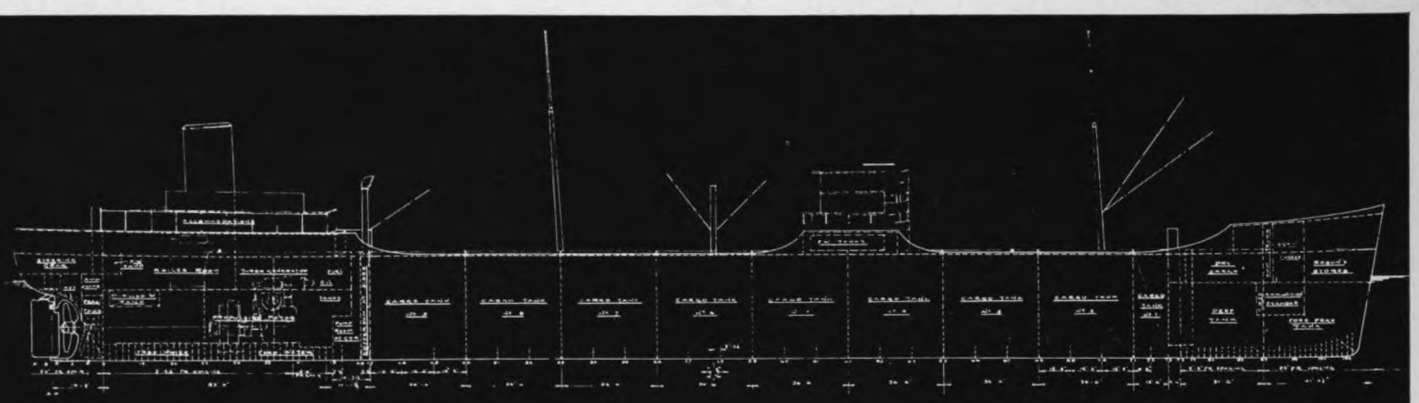
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TYPICAL T2 TANKER

Length, overall	523' 6"
Beam, moulded	68'
Draft, loaded	30' 1/4"
Gross tonnage	10,448
Deadweight tonnage	16,613

Machinery	TURBO-ELECTRIC
Horsepower, shaft	6000
Speed, knots	14.5
Cruising range, miles	12,600
Crew, approximately	44

MAIN CARGO TANKS

TANK No	LOCATION	GALLONS	BARRELS (42G)
2	FR°68 - 71	391589.9	9323.57
3	65 - 68	391928.8	9331.64
4	62 - 65	391885.6	9330.61
5	59 - 62	391473.5	9320.80
6	56 - 59	391687.9	9325.90
7	53 - 56	391329.3	9317.36
8	50 - 53	391455.0	9320.36
9	47 - 50	385096.8	9168.97
	TOTAL	3126446.8	74439.28

SIDE CARGO TANKS

TANK No	LOCATION	GALLONS	BARRELS (42G)
1 - P	FR°71 - 72	106822.8	2543.40
1 - S	71 - 72	106425.3	2533.94
2 P	68 - 71	130736.0	3112.76
2 S	68 - 71	130736.0	3112.76
3 P	65 - 68	163721.6	3898.13
3 S	65 - 68	163721.6	3898.13
4 P	62 - 65	169491.7	4035.52
4 S	62 - 65	169491.7	4035.52
5 P	59 - 62	170010.3	4047.86
5 S	59 - 62	170010.3	4047.86
6 P	56 - 59	170010.3	4047.86
6 S	56 - 59	170010.3	4047.86
7 P	53 - 56	169901.5	4045.27
7 S	53 - 56	169901.5	4045.27
8 P	50 - 53	167689.3	3992.60
8 S	50 - 53	167689.3	3992.60
9 P	47 - 50	152916.8	3640.88
9 S	47 - 50	152916.8	3640.88
	Total	2802193.1	66719.10
	TOTAL CARGO	5928643.9	141158.3

DRY CARGO

2ND DECK	FR° 76-83	CU. FT.
	TOTAL DRY CARGO	15203

FRESH WATER TANKS

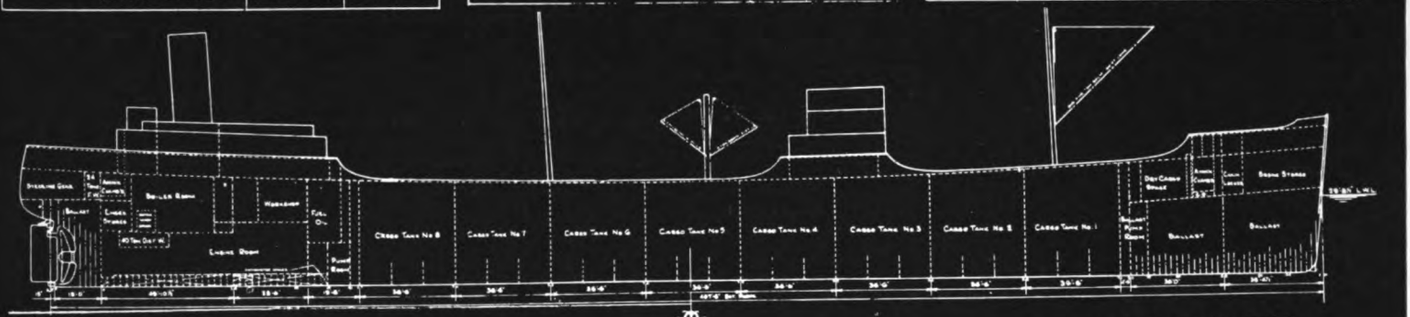
TANK	LOCATION	TONS F.W.
FEED WATER:		
DISTILLED WATER	FR° 10-18 ENG RM	36.39
INNER BOTTOM T.	FR° 11 - 27 PORT	41.35
Do.	FR° 11 - 24 STBD	31.41
Do	FR° 27-44 PORT	77.12
Do.	FR° 27-44 STBD	79.52
	TOTAL FEED WATER	265.79
DRINKING WATER		
F W TANK	STEERG GR FLAT FR° 9-12	28.62
Do	UNDER BRIDGE PK P	35.37
Do	UNDER BRIDGE PK S	35.37
	TOTAL DRINKING WATER	99.36

FUEL OIL TANKS

TANK No	LOCATION	GALLONS	BARRELS (42G)
WING TANK	FR° 36 -46 P	104687.3	2497.34
WING TANK	FR° 36 -46 S	104687.5	2497.64
DEEP TANK	FR° 75 - 83 S.	99485.0	2368.69
DEEP TANK	FR° 75 - 83 P	99603.4	2371.51
	TOTAL FUEL	408463.4	9735.28

BALLAST TANKS AND COFFERDAMS

TANK	LOCATION	TONS S.W.
FORE PEAK	FR° 83 - FOR'D	314.23
DEEP TANK	FR° 75 - 83 P	380.17
DEEP TANK	FR° 75 - 83 S.	364.88
COFFERDAM	FR° 73 - 75 P	66.47
COFFERDAM	FR° 73 - 75 S	66.47
COFFERDAM	FR° 46 - 47 P	57.11
COFFERDAM	FR° 46 - 47 S	57.11
AFT PEAK	FR° 0 - 9	56.12
	TOTAL BALLAST	1362.26



T3 TANKER

PARTICULARS

LENGTH OVERALL	501'-8"
LENGTH BETWEEN PERPENDICULARS	487'-6"
BEAM MOLDED	68'-0"
DEPTH MOLDED	37'-0"
DRAFT MOLDED	29'-8¼"
DRAFT FREEBOARD TO UNDERSIDE KEEL	30'-0¾"

TONNAGES

GROSS	9879.22
NET	5870.00
UNDERDECK	8790.56
PANAMA GROSS	10615.99
PANAMA NET	7037.81
SUEZ GROSS	10615.99
SUEZ NET	8088.09

TANK CAPACITIES

CENTER CARGO TANKS

TANK	LOCATION	GALLONS	BARRELS
N° 1	FRS 68-71	394.758	9399.01
N° 2	FRS 65-68	382.430	9.05.47
N° 3	FRS - 62-65	370.349	8817.83
N° 4	FRS - 58-62	362.160	8622.86
N° 5	FRS - 56-59	358.584	8537.72
N° 6	FRS - 53-56	359.148	8551.14
N° 7	FRS - 50-53	364.054	8667.96
N° 8	FRS - 47-50	376.132	8955.52
TOTAL CENTER TANKS		2,967,615	70657.51

WING CARGO TANKS

TANK	LOCATION	GALLONS	BARRELS
N°1 PORT	FRS 68-71	155,980	3715.82
N°1 STBD	FRS 68-71	155,980	3715.82
N°2 PORT	FRS 65-68	173,805	4138.22
N°2 STBD	FRS 65-68	173,805	4138.22
N°3 PORT	FRS 62-65	171,836	4091.34
N°3 STBD	FRS 62-65	171,836	4091.34
N°4 PORT	FRS 59-62	168,126	4003.02
N°4 STBD	FRS 59-62	168,126	4003.02
N°5 PORT	FRS 56-59	166,389	3961.65
N°5 STBD	FRS 56-59	166,389	3961.65
N°6 PORT	FRS 53-56	166,625	3967.28
N°6 STBD	FRS 53-56	166,625	3967.28
N°7 PORT	FRS 50-53	166,331	3960.27
N°7 STBD	FRS 50-53	166,331	3960.27
N°8 PORT	FRS 47-50	157,159	3741.89
N°8 STBD	FRS 47-50	157,159	3741.89
TOTAL WING TANKS		2,652,302	63,154.98
TOTAL WING & CENTER		5,620,117	133,812.49

FUEL OIL TANKS

TANK	LOCATION	GALLONS	BARRELS
CENTER	FRS. 42-46	87,705	2090.29
WING-P	FRS. 42-46	57,109	1359.68
WING-S	FRS. 42-46	57,109	1359.68
TOTAL FUEL OIL		202,013	4809.65

COFFERDAMS

TANK	LOCATION	TONS (SW)
FWD C.D. PORT	FRS 71-72	121.35
FWD C.D. STBD	FRS 71-72	68.32
AFT C.D. PORT	FRS. 46-47	45.41
AFT C.D. STBD	FRS 46-47	45.41
TOTAL COFFERDAMS		280.49

BALLAST . TANKS

TANK	LOCATION	TONS
FORE PEAK	FR 88-STEM	443.60
BALLAST PORT	FRS 72-88	596.42
BALLAST-STBD	FRS 72-88	491.04
AFT PEAK	FRS. 1-9	91.40
TOTAL BALLAST		1622.46

FEED WATER TANKS

TANK	LOCATION	TONS
FEED WATER-P	FRS 11-29 D.B	32.68
FEED WATER-S	FRS. 11-29 D.B	32.68
FEED WATER-P	FRS. 29-44 D.B	49.52
FEED WATER-S	FRS 29-44 D.B	49.52
TOTAL FEED WATER		164.42

FRESH WATER TANKS

TANK	LOCATION	TONS
FRESH WATER	FRS 6-9	25.33
FRESH WATER	UNDER BRIDGE-S	39.65
FRESH WATER	UNDER BRIDGE-P	39.65
TOTAL FRESH WATER		104.63

MISCELLANEOUS TANKS

TANK	LOCATION	TONS (FW)
DISTILLED WATER	FRS 12-20	38.70

DRY CARGO SPACE

2-nd DECK	FRS 72-78	GRAIN	27,155 CU FT
2-nd DECK	FRS 72-78	BALE	24,722 CU FT

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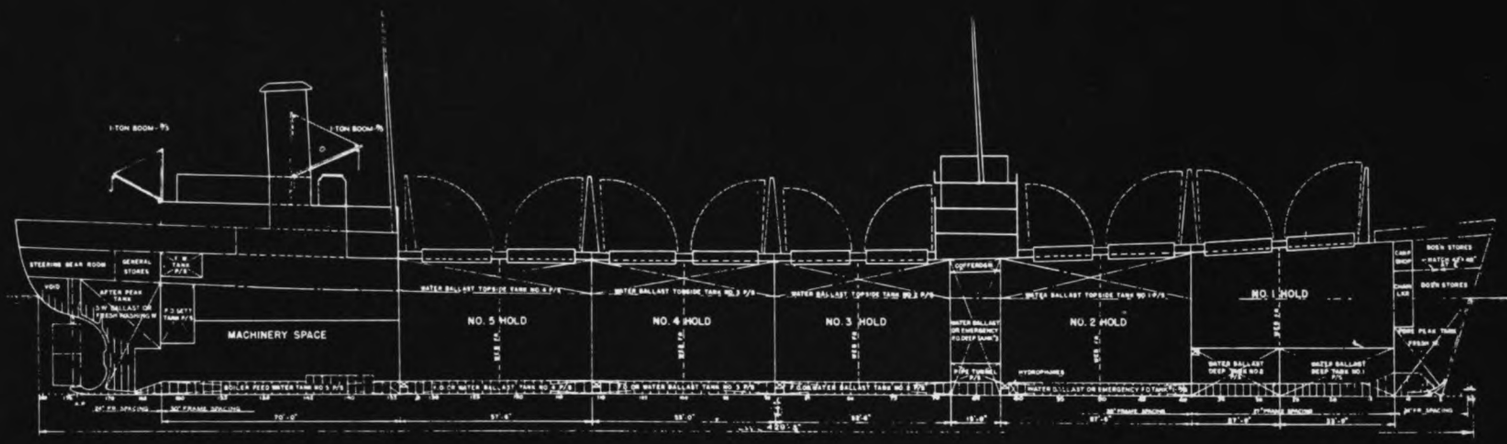


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DESIGN NO. EC2-S-AWI
COLLIER

FUEL OIL

TANK		GALS.	TONS@37.23 C.F.
FUEL OIL TANK	NO.2 P	37316	134
" " "	NO.2 S	37316	134
" " "	NO.3 P	38709	139
" " "	NO.3 S	38709	139
" " "	NO.4 P	30911	111
" " "	NO.4 S	30911	111
" " SETTLING TANK	P	15038	54
" " " "	S	15038	54
TOTAL FUEL OIL		243948	876
EMERGENCY F.O. TANK NO.1	P	37873	136
" " " "	1-S	37316	134
EMERGENCY F.O. DEEP TANK NO. 3		225848	811
TOTAL EMERGENCY F.O.		301037	1081

WATER BALLAST

TANK		CU. FT.	TONS@35 C.F.
FORE PEAK		4585	131
WATER BALLAST	NO. 1 P	5154	147
" "	NO. 1 S	5113	146
" "	NO. 2 P	5074	145
" "	NO. 2 S	5074	145
" "	NO. 3 P	5261	150
" "	NO. 3 S	5261	150
" "	NO. 4 P	4203	120
" "	NO. 4 S	4203	120
AFTER PEAK		5355	153
DEEP TANKS	NO. 1 P	5810	166
" "	NO. 1 S	5810	166
" "	NO. 2 P	7875	225
" "	NO. 2 S	7875	225
" "	NO. 3	30695	877
TOPSIDE BALLAST			
TANK	NO. 1 P	5530	158
" "	NO. 1 S	5530	158
" "	NO. 2 P	4410	126
" "	NO. 2 S	4410	126
" "	NO. 3 P	4609	132
" "	NO. 3 S	4609	132
" "	NO. 4 P	4723	135
" "	NO. 4 S	4723	135
TOTAL		145892	4168

STORES

STOREROOM	CU. FT.
STOREROOM (POOP DECK)	1107
GENERAL STORES ON FLAT AT 2ND DK LEVEL	4305
BOS'N STORES ON 2ND DK F.P. TO FR 12	2938
BOS'N STORES ON FLAT BET. 2ND & UPPER DK	3492
DRY STORES	1600
LINEN LOCKERS	900
BONDED STORES	252
REFRIGERATED STORES	
MEAT	1110
FISH	335
VEGETABLES	989
DAIRY	185
HANDLING ROOM	364

CARGO

COMPARTMENT	CU. FT.	COAL CAP.(TONS)
HOLD NO. 1	84611	1880
HOLD NO. 2	103133	2292
HOLD NO. 3	91300	2029
HOLD NO. 4	95491	2122
HOLD NO. 5	98264	2184
(45 CU FT./TON) TOTAL	472799	10507

FRESH WATER

TANK		GALS.	TONS@36 C.F.
BOILER FEED TANK	NO. 5 P	15349	57
" " "	NO. 5 S	15349	57
FRESH WATER TANK	P	10233	38
" " "	S	10233	38
FORE PEAK		34198	127
AFTER PEAK		40123	149
TOTAL		125485	466

EQUIPMENT & DEFENSE INSTALLATIONS	
LIFE RAFTS - 4	12.1
DEGAUSSING	8.0
TOTAL	20.1

PRINCIPAL DIMENSIONS

L.O.A.	443'-7½"
L.B.P. (25'-3¼" W.L.)	416'-0"
BREADTH, MLD.	56'-10¾"
BREADTH, EXTREME	57'-0"
DEPTH TO UPPER DECK, MLD.	37'-4"
DRAFT (INTERNATIONAL)	28'-7 1/8"
DRAFT (COASTWISE EMERGENCY)	29'-3⅜"

LIGHTWEIGHT DRAFT 8'-5"

PEACETIME CONDITIONS

LIGHTSHIP WEIGHT 3683 TONS
DEADWEIGHT 11047 TONS

WARTIME CONDITIONS

LIGHTSHIP WEIGHT 3703 TONS
INCLUDING 20 TONS DEFENSE INSTALLATION
DEADWEIGHT 11027 TONS

CAPACITIES & TYPE OF WINCHES
4 - 7"x 12" DBL. GEARED WINCHES

HEIGHTS OF MASTS (VERTICAL DIMENSIONS)
MAIN MAST - FROM POOP DECK 65'-0"
FOREMAST - FROM NAVIGATING BRIDGE DECK 49'-11"

ENGINE
DIRECT ACTING CONDENSING THREE CYLINDER TRIPLE EXPANSION ENGINE DEVELOPING 2500 I.H.P. AT 76 R.P.M.

BOILERS
TWO MAIN BOILERS OF THE CROSS DRUM SECTIONAL SINUOUS HEADER STRAIGHT TUBE TYPE FITTED WITH SUPERHEATERS, BURNING BUNKER "C" FUEL OIL

CAPACITIES: FUEL OIL - 98% FULL
WATER BALLAST - 100% FULL

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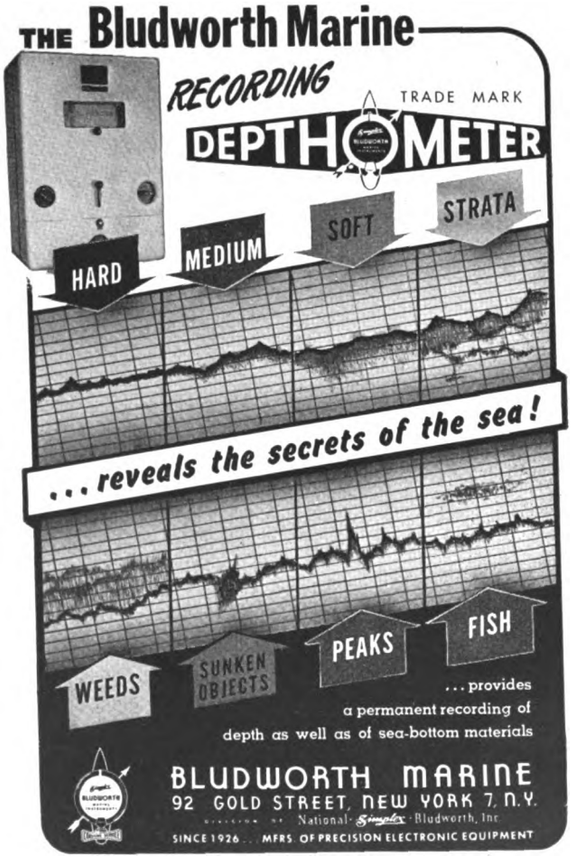
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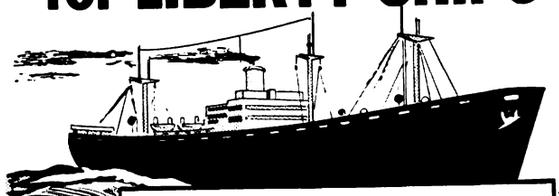
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...provides a permanent recording of depth as well as of sea-bottom materials

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REPLACEMENT PARTS for LIBERTY SHIPS



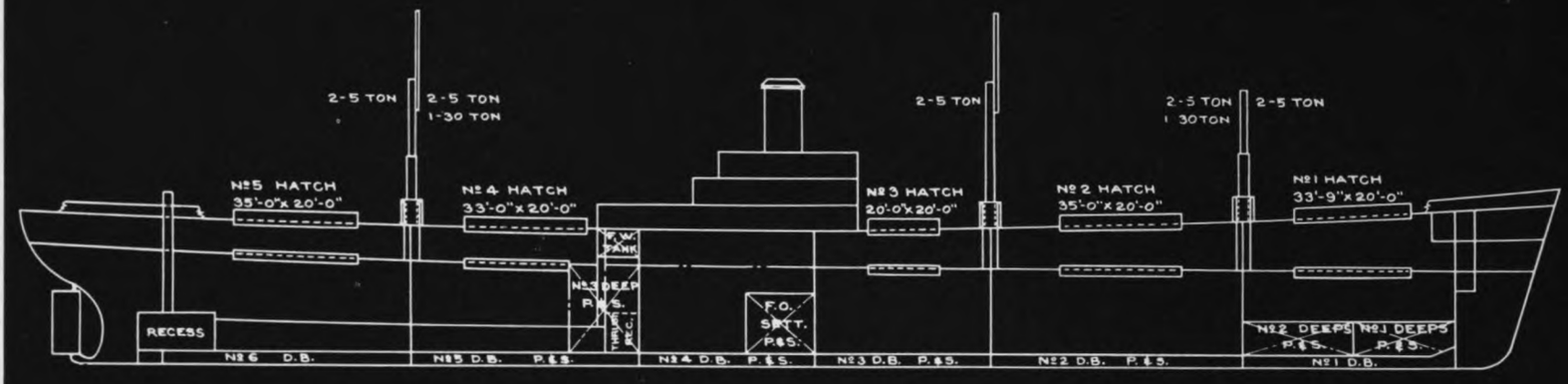
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- EC-2 Liberty Ship tail shafts.
- Auxiliary condenser water boxes.
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- Pistons, valves, valve liners, rods and stems for Enberg generators and Whitin (B 5"x6", C 6"x7") engines.
- Cargo winch parts.
- Booms and fittings.
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EC-2 TYPE (LIBERTY) VESSELS CALIFORNIA SHIPBLDG. CORP.

LENGTH O.A.	441'-6"	GROSS TONNAGE (APPROX.)	7180
LENGTH B.P.	416'-0	NET TONNAGE (APPROX.)	4370
BREADTH-MLD.	56'-10¾"	DEADWEIGHT TONNAGE (TOTAL)	10807
BREADTH-EXTREME	57'-0"	DISPLACEMENT TONNAGE @ 27'-8 15/16"	14230
DEPTH TO UPPER DECK-MLD.	37'-4"	DISPLACEMENT TONNAGE @ 7'-10½"	3423
DEPTH TO 2ND DECK-MLD.	28'-7"		
DRAFT - LOADED	27'-8 15/16"	PASSENGERS	NONE
DRAFT - LIGHT	7'-10½"		

CARGO CAPACITIES

HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	41257	36083
1	TWEEN DECK	42924	39322
2	HOLD	98860	92008
2	TWEEN DECK	46744	42630
3	HOLD	68459	59793
3	TWEEN DECK	27970	23904
4	HOLD	58841	52574
4	TWEEN DECK	35277	29689
5	HOLD	58620	51571
5	TWEEN DECK	34570	30864
1	№1 DEEP PORT	3639	2729
1	№1 DEEP STBD.	3639	3004
1	№2 DEEP PORT	7473	5294
1	№2 DEEP STBD.	7473	5578
4	№3 DEEP PORT	13674	12506
4	№3 DEEP STBD.	13188	12024
	TOTALS	562608	499573
	TOTALS LESS №3 DEEPS	535746	475043

SHIP'S STORAGE SPACE

DECK	COMPARTMENT	CU. FT.
UPPER	BOS'N'S. STORES FWD.	3034
SECOND	" " "	3492
"	CABIN "	4329
"	LINEN LOCKER	585
BOAT	BONDED STORES	186
	TOTAL	11626

SHIP'S REFRIGERATED STORES

MEAT	801 C.F.
FISH	173 "
VEGETABLES	768 "
DAIRY	176 "
TOTAL	1918 "

FUEL CONSUMPTION @ LOADED DRAFT

SPEED	BBLS/24HR.	RANGE DAYS	
11	170	72	MAX. SPEED
10	150	81	CRUISING "
9	130	94	
8	110	111	
6.5	80	153	

PORT CONSUMPTION IDLE 20 BBLS/DAY
PORT CONSUMPTION CARGO 35 " / "

TANK CAPACITIES 100%

FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.
	FORE PEAK	4845			138	
	№1 D.B.	5045	896	133	144	
	№2 D.B. PORT	6041	1063	159	173	
	№2 D.B. STBD.	6041	1063	159	173	
	№3 D.B. PORT	4453	783	117	127	
	№3 D.B. STBD.	4453	783	117	127	
	№4 D.B. PORT	2412			69	67.2
	№4 D.B. STBD.	2412			69	67.2
	№5 D.B. PORT	4485	782	118	128	
	№5 D.B. STBD.	4485	782	118	128	
	№6 D.B.	4191	733	110	120	
	AFTER PEAK	5318			152	
	№1 DEEP PORT	3983			114	
	№1 DEEP STBD.	3983			114	
	№2 DEEP PORT	7427			212	
	№2 DEEP STBD.	7427			212	
	№3 DEEP PORT	13583	2420	358	388	
	№3 DEEP STBD.	13101	2320	345	374	
	FRESH WATER PORT	987			28	27.0
	" " STBD.	987			28	27.0
	SETTLING PORT	1861	335	50		
	" STBD.	1861	335	50		
	TOTALS		12295	1834	3018	188.4
	TOTAL LESS DEEPS		7755			

MANNING AUTHORITY

DECK		ENGINE		STEWARDS - PURSER	
MASTER	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
CHIEF OFFICER	1	1ST ASST. ENG'R.	1	CHIEF COOK	1
2ND OFFICER	1	2ND ASST. ENG'R.	1	2ND COOK & BAKER	1
3RD OFFICER	1	3RD ASST. ENG'R.	1	ASST. COOK	1
CADETS	2	CADETS	2	MESSMEN	3
RADIO OPERATOR	1	DECK ENG'R.	1	UTILITY MESSMEN	2
CARPENTER	1	OILERS	3	TOTAL	9
BOS'N. A.B.	1	FIREMEN-WATERTENDERS	3		
A.B. SEAMEN	6	WIPERS	2	PURSER	1
O. SEAMEN	3	TOTAL	15		
TOTAL	18				
				TOTAL CREW 43	

GENERAL PARTICULARS

WINCHES
8 DOUBLE GEARED STEAM WINCHES FOR 5 & 15 TON BOOMS (7"x12")
2 " " " " " 30 OR 50 " " (10½"x12")

ENGINE
DIRECT ACTING CONDENSING THREE CYLINDER TRIPLE EXPANSION ENGINE
2500 I.H.P. @ 76 R.P.M.

BOILERS
TWO MAIN BOILERS OF CROSS DRUM SECTIONAL SINUOUS HEADER
STRAIGHT TUBE TYPE. FITTED WITH SUPER HEATERS. W.P. 230# FUEL BUNKER "C"

PROPELLER
SOLID TYPE BRONZE 4 BLADE 18'-6" DIA. 16'-0" PITCH

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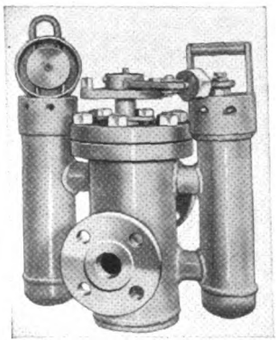
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COEN SAFETY STRAINER
The Coen inverted taper plug type Duplex Strainer has been a "standard" for thirty years. Fuel Oil Strainers on all Liberty, C-4, and many other class vessels were Coen. Now we have developed the entirely new Coen Safety Strainer. All welded steel construction makes this strainer unexcelled for high temperature, high pressure service. The two disc type valves for switching flow from one basket well to the other are pressure seated and cannot be moved until pressure is equalized. Well covers cannot be removed until pressure against the locking-pin is released. Accidental discharge of any appreciable quantity of inflammable fluid at high temperature and pressure is thus impossible. Sizes from 1½" up. Valve disc facings to suit conditions. Write for Bulletin 28.

OTHER COEN PRODUCTS FOR MARINE POWER PLANTS

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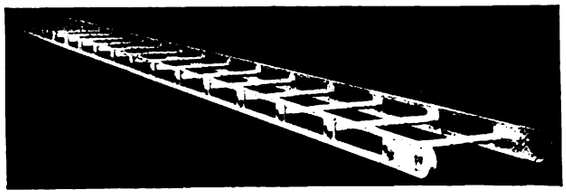
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● *STRONG*



GW 100 GANGWAY
Supports a distributed load of 6,000 lbs. Recommended for a maximum load of 3,000 lbs. Lengths up to 36 ft.

● Our safety-built aluminum gangways and marine ladders stand up to the most severe dockside and shipboard use. Lightweight, easy to handle. Specify strong, durable ALUMINUM for low maintenance cost and easy handling. Literature on request.



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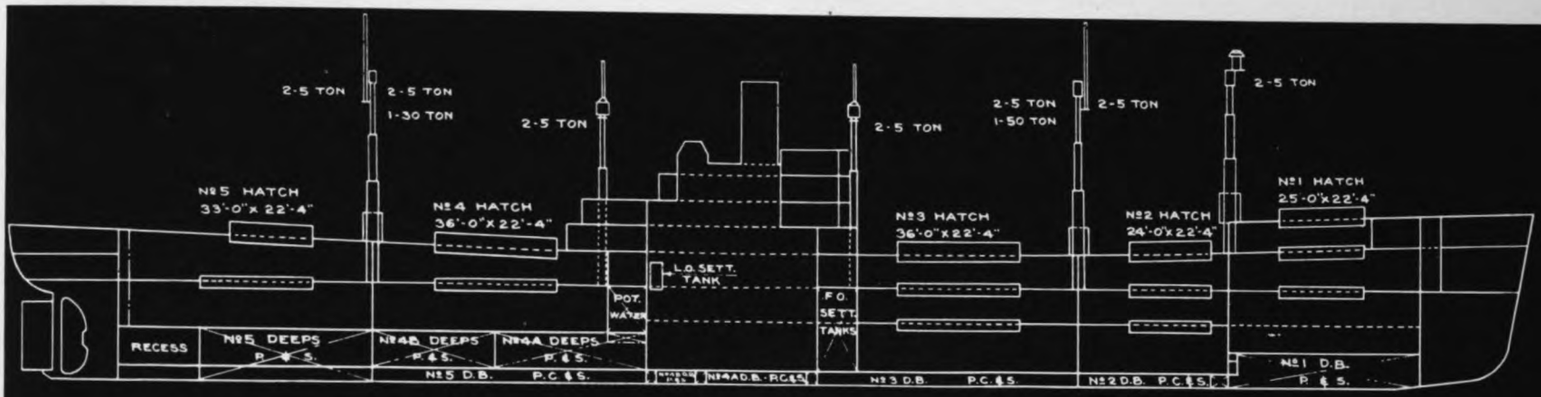


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VC2-S-AP3 TYPE (VICTORY) VESSELS

LENGTH O.A.	455'-3"	GROSS TONNAGE (APPROX.)	7200
LENGTH B.P.	436'-6"	NET TONNAGE (APPROX.)	4300
BREADTH - MLD.	62'-0"	DEADWEIGHT TONNAGE (TOTAL)	10600
BREADTH - EXTREME	62'-1⅝"	DISPLACEMENT TONNAGE @ ~~28'-0 13/16"~~ 29'-0"	+4900 15500
DEPTH TO MAIN DECK - MLD.	38'-0"	DISPLACEMENT TONNAGE	
DRAFT - LOADED	28'-0 13/16"		
DRAFT - LIGHT		PASSENGERS	

CARGO CAPACITIES			
HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	32690	27910
1	UPPER TWEEN DECK	28100	23785
1	FOCSLE TWEEN DECK	20925	18730
2	HOLD	33095	27945
2	LOWER TWEEN DECK	25965	21805
2	UPPER TWEEN DECK	30310	27010
3	HOLD	62340	52840
3	LOWER TWEEN DECK	44755	37795
3	UPPER TWEEN DECK	50905	45555
4	HOLD	58675	51100
4	UPPER TWEEN DECK	54405	49200
5	HOLD	32385	25905
5	UPPER TWEEN DECK	49190	43630
	TOTALS	523740	453210

SHIP'S STORAGE SPACE			
DECK	COMPARTMENT	CU. FT.	
FOCSLE	PAINT LOCKER	154	
"	LAMP LOCKER	141	
MAIN	BOSN'S STORES	2301	
MAIN-FWD	" " IN WAY OF MAST	325	
" -AFT	" " IN WAY OF MAST	325	
SECOND	" "	2080	
"	DRY STORES	2972	
"	STEWARD'S STORES	1314	
AFT FLAT	ROPE LOCKER (35'-6")	345	
MACH. "	ENGINEER'S STORES	1080	
	TOTAL	11037	

SHIP'S REFRIGERATED STORES		
	BOX	CU. FT.
	VEGETABLES	2004
	HANDLING ROOM	604
	FISH	269
	DAIRY	371
	MEAT	1347
	TOTAL	4595

LUBRICATING & DIESEL OIL						
TANKS	FRS.	C. OF G. FROM ℄	C. OF G. FROM ℄	OIL 98% FULL GALLONS	BARRELS	TONS
LUB. OIL STORAGE-S	94-95	36.52	31.28	1777	42	6.4
LUB. OIL SETTLG.-P.	94-95	36.52	31.28	1772	42	6.4
DIESEL OIL - P.	90-95	31.50	2.00	815	19.5	2.6
DIESEL OIL - S.	90-95	31.50	2.00	815	19.5	2.6
DIESEL OIL FOR DIESEL GENERATOR	101	57.10	51.86	90	2.0	.3
FUEL OIL FOR GALLEY RANGE	101-102	57.60	48.46	27	0.5	.1

TANK CAPACITIES 98%					100 %	
FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.
14- 37	№1 D.B. - PORT		862.0	130.0	141.1	
14- 37	№1 D.B. - STBD.		862.0	130.0	141.1	
37- 52	№2 D.B. - PORT		246.5	37.2	40.4	
37- 52	№2 D.B. CENTER		600.5	90.5	98.3	
37- 52	№2 D.B. STBD.		246.5	37.2	40.4	
52- 78	№3 D.B. PORT		893.5	134.7	146.2	
52- 78	№3 D.B. CENTER		1066.0	160.8	174.5	
52- 78	№3 D.B. STBD.		893.5	134.7	146.2	
90- 95	№4B D.B. PORT		173.5	26.2	28.4	
90- 95	№4B D.B. STBD.		173.5	26.2	28.4	
95-122	№5 D.B. PORT		538.5	81.2	88.1	
95-122	№5 D.B. CENTER		1100.0	165.9	180.1	
95-122	№5 D.B. STBD.		538.5	81.2	88.1	
95-110	№4A DEEP PORT		2350.5	354.5	384.8	
95-110	№4A DEEP STBD.		2121.0	319.9	347.2	
110-122	№4B DEEP PORT		1577.0	237.8	258.1	
110-122	№4B DEEP STBD.		1407.0	212.2	230.3	
122-139	№5 DEEP PORT		1427.5	215.3	233.7	
122-139	№5 DEEP STBD.		1186.0	178.9	194.1	
14-FWD.	FORE PEAK				106.0	
147-AFT	AFTER PEAK				34.0	
74- 78	F.O. SETTLING PORT		423.5	63.9	69.3	
74- 78	F.O. SETTLING STBD.		426.5	64.3	69.8	
74- 78	DISTILLED WATER					21.2
79- 89	№4A D.B. PORT - RES. FEED					55.1
79- 89	№4A D.B. CENTER-RES. FEED					65.7
79- 89	№4A D.B. STBD.-RES. FEED					57.2
95- 99	POTABLE WATER-CENTER					95.7
	TOTALS		19113.5	2882.6	3268.6	294.9
	TOTALS LESS DEEPS		9044.5	1364.0	1620.4	

MANNING AUTHORITY					
DECK		ENGINE		STEWARDS	
CAPTAIN	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
1ST MATE	1	1ST ASST. ENGR.	1	CHIEF COOK	1
2ND MATE	1	2ND ASST. ENGR.	1	2ND COOK	1
3RD MATE	1	3RD ASST. ENGR.	1	NIGHT COOK & BAKER	1
JR. 3RD MATE	1	JR. 3RD ASST. ENGR.	1	ASST. COOK	1
RADIO OPERATOR	1	CADETS	2	MESSMEN	4
CADETS	2	DECK ENGINEER	1	UTILITY MEN	2
CLERK TYPIST	1	OILERS	3	TOTAL	11
BOSN.	1	WIPERS	3	ARMED GUARD	
CARPENTER	1	FIREMEN	3	GUNNERY OFFICER	1
A.B. SEAMEN	6	SPARES	3	GUNNERS	24
ORDINARY SEAMEN	6	TOTAL	20	COMMUNICATIONS MEN	3
TOTAL	23			TOTAL	28
				TOTAL CREW	82

CRUISING RANGE AT FULL SPEED INCLUDING DEEP TANK FUEL SUPPLY 51 Days

GENERAL PARTICULARS

WINCHES
12 SINGLE SPEED 50 H.P. UNIT WINCHES AT 5 TON BOOMS
2 TWO SPEED 50 H.P. UNIT WINCHES AT 30 & 50 TON BOOMS

WINDLASS
HORIZONTAL SHAFT - 60 H.P. - TWO WARPING HEADS

CAPSTAN
1 VERTICAL SHAFT - 35 H.P.

ENGINE
CROSS-COMPOUND DOUBLE REDUCTION GEAR TURBINES - 6000 H.P. @ 100 R.P.M.

BOILERS
2 SECTIONAL HEADER-SINGLE PASS WATER TUBE BOILERS

PROPELLER
SOLID TYPE BRONZE 4 BLADE

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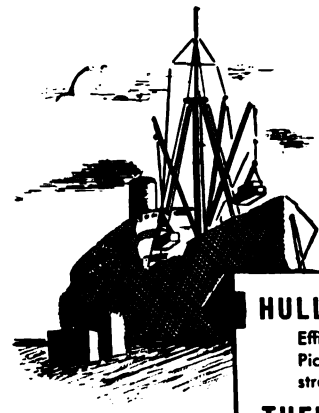
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INSULATION WHERE IT COUNTS SO MUCH

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Efficiency insured with Eagle Picher Mineral Wool or Armstrong Corkboard.

THERMAL

Pabco (Plant) Precision-Molded 85% Magnesia recommended for pipe and boiler covering.

REFRIGERATION

Armstrong Cork provides even, accurate low temperatures.

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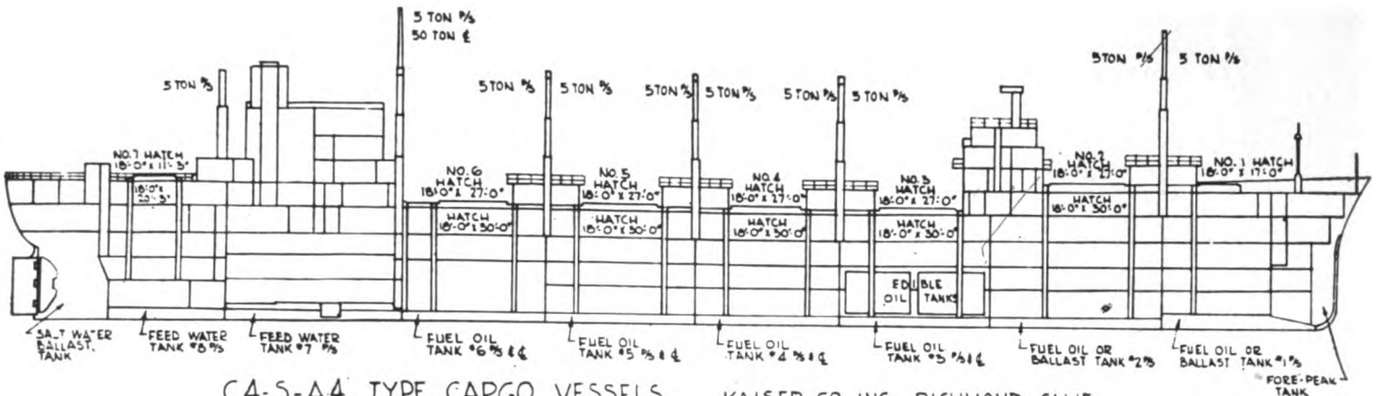
PACIFIC SHIP REPAIR Inc.

Pier 25 & 27

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C4-S-A4 TYPE CARGO VESSELS

KAISER CO. INC., RICHMOND, CALIF.

LENGTH OVER-ALL	522'-10½"
LENGTH BTWN. PERP.	496'-0"
BREADTH - EXTREME	71'-8⅛"
BREADTH - MOLDED	71'-6"
DEPTH, MLD. UPPER DK. AT SIDE	43'-6"
MEAN DRAFT, SUMMER FREEBOARD	10'-10"
DRAFT LOADED	32'-9⅜"
DRAFT LIGHT	12'-1½"

GROSS TONNAGE	10,662.53
NET TONNAGE	7,637.00
DEADWEIGHT TONNAGE (TOTAL)	14,865.00
DISPLACEMENT TONNAGE @ 32'-9⅜"	22,000.00
DISPLACEMENT TONNAGE @ 12'-1½"	7,137.00

PASSENGERS 2 RMS. OF 2 TOTAL 4
MAXIMUM TRIAL SPEED 21.9 KNOTS

CARGO CAPACITIES

HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	7495	5670
1	1ST. PLAT.	8252	6509
1	3RD. DECK	8806	7100
1	2ND. DECK	11156	8960
1	UPPER DK.	13191	10852
2	HOLD	36885	30906
2	1ST. PLAT.	29347	24598
2	3RD. DECK	29819	25735
2	2ND. DECK	32390	26276
2	UPPER DK.	21545	19312
3	3RD DECK	32959	26352
3	2ND. DECK	33272	31928
4	HOLD	42104	39776
4	1ST PLAT	35026	30530
4	3RD. DECK	35026	30804
4	2ND. DECK	35485	32140
5	HOLD	42316	40650
5	1ST. PLAT.	35054	30256
5	3RD. DECK	35054	30544
5	2ND DECK	35497	33622
6	HOLD	76412	65211
6	3RD. DECK	54854	51286
6	2ND. DECK	35290	31797
7	2ND DECK	5464	4732
7	UPPER DK.	6402	6188
	TOTALS	727433	628847

SHIP'S STORAGE SPACE

DECK	COMPARTMENT	CU. FT.
UPPER	BOSN'S STORES	3560
"	DECK PAINT	960
"	ELEC. SHOP	640
"	LAMP ROOM	480
"	CARPENTER SHOP	485
"	DRY STORES	1235
"	BOSN'S STORES	1215
2ND	" "	995
3RD	PAINT LKR (ENG'RS)	550
3RD	BOSN'S STORES	345
	TOTAL	11795

SHIPS REFRIGERATED STORES

DECK	SPACE	CU. FT
UPPER	THAWING RM.	375
"	VEGETABLES	975
"	MEAT	950
"	ICE	55
"	RES. MEAT & VEG	420
	TOTAL	2775

REFRIGERATED CARGO

HOLD	SPACE	CU. FT. BALE
NO.7	1ST. PLAT. P&S	5591
"	3RD. DK. FWD P&S	4259
"	3RD. DK AFT. P&S	5158
"	2ND. DK. PORT	5910
"	2ND. DK. STBD.	5777
"	UPPER DK. PORT	2317
"	UPPER DK. STBD.	3163
	TOTAL	32375

FUEL CONSUMPTION @ LOADED DRAFT

SPEED	BBLS/24 HRS	RANGE DAYS	
18.5	480	29	MAX. SPEED
16.0	360	38	CRUISING SPEED
10.0	175	78	
9.0	160	86	
8.0	145	94	
6.5	130	105	

FUEL CAPACITY - 13696.5 BBLS.
PORT CONSUMPTION, IDLE 65 BBLS. PER 24 HRS.
PORT CONSUMPTION CARGO - 75 BBLS. PER 24 HRS.

TANK CAPACITIES - 100%

FRAMES	TANK			CAP. CU. FT	BBLS FUEL	TONS FUEL	TONS S.W.	TONS F.W.
13-32	NO.1 DBLE BTM.	PORT		2429	432.4	65.2	69.5	
13-32	NO.1	STBD.		2429	432.4	65.2	69.5	
37-58	NO.2	PORT		1962	349.3	52.6	56.2	
32-57	NO.2	℄		7165	1276.5	192.4	204.9	
37-58	NO.2	STBD.		1962	349.3	52.6	56.2	
58-80	NO.3	PORT		4257	758.3	114.3	121.7	
58-79	NO.3	℄		6321	1092.5	161.7	172.1	
58-80	NO.3	STBD.		4257	758.3	114.3	121.7	
80-102	NO.4	PORT		5209	927.6	139.8	148.8	
80-101	NO.4	℄		6095	1085.2	163.7	174.2	
80-102	NO.4	STBD.		5209	927.6	139.8	148.8	
102-124	NO.5	PORT		5017	893.5	134.7	143.4	
102-123	NO.5	℄		6085	1083.2	163.4	173.8	
102-124	NO.5	STBD.		5017	893.5	134.7	143.4	
124-146	NO.6	PORT		3251	578.8	87.3	92.9	
124-145	NO.6	℄		6048	1077.3	162.4	172.9	
124-146	NO.6	STBD.		3251	578.8	87.3	92.9	
147-[illegible]	NO.7	PORT		5422				89.6
147-172	NO.7	STBD.		2883				91.2
1[illegible]-188	NO.8	PORT		952				25.9
172-188	NO.8	STBD.		952				25.9
168-171	D.W. FILLED WATER	PORT		241				6.7
165-171	DISTILLED WATER	STBD.		241				6.7
154-159	DRINKING WATER	PORT		275				7.4
155-159	DRINKING WATER	STBD.		275				7.4
18 FWD.	FOREPEAK			2887			82.5	
194 AFT.	AFTERPEAK			5845			167.0	
172-178	F.O. SETTLING	PORT		1362	247	36.6		
172-181	F.O. SETTLING	STBD.		1411	257.4	37.9		
58-69	NO.1 EDIBLE OIL - FWD			2189		590.1		612.0
70-79	NO.2 EDIBLE OIL - AFT			2167		582		604.0
59-69	HOT WELLS FWD.							
70-79	HOT WELLS AFT.							
159-162	L.O. SETTLING	PORT		223	45.6	6.0		
159-162	L.O. STORAGE	PORT		223	45.9	6.0		
150-152	DIESEL EMERG. GEN.	℄		44	8.5	1.2		
150-152	" GALLEY & COLD START			2010	388.5	54.4		
	TOTALS			145023	14097.1	3296.7	24123	1541.5

MANNING AUTHORITY

DECK		ENGINE		STEWARD	
CAPTAIN	1	CHIEF ENGINEER	1	STEWARD	1
1ST OFFICER	1	1ST ASST. ENG'R	1	COOKS	2
2ND OFFICER	1	2ND ASST. ENG'R	1	MESSMEN	8
3RD MATE	1	3RD ASST. ENG'R.	1		
JR. 3RD OFFICER	1	JR. 3RD ASST. ENG'R	1		
CHIEF RADIO OPERATOR	1	JUNIOR ENGINEERS	3		
DECK CADET	1	ENGINEER CADET	1		
BOATSWAIN	1	CHIEF ELECTRICIAN	1		
CARDENTER	1	REFRIGERATOR ENGR.	1		
SEAMEN	9	JR. REFR. ENG.	2		
MAINTENANCE MEN	5	ELECTRICIANS ASST.	1		
PURSER - PHARMACIST	1	OILERS	5		
		FIREMEN	3		
		WIPERS	5		
TOTAL	22	TOTAL	25	TOTAL	11

TOTAL CREW 56
PASSENGERS 4

GENERAL PARTICULARS

WINCHES

22 SINGLE SPEED ELECTRIC MOTOR DRIVEN CARGO WINCHES 50 HP FOR 5 TON BOOMS
2 TWO SPEED ELECTRIC MOTOR DRIVEN CARGO WINCHES 50 H.P. FOR 50 TON BOOM

ENGINE

GEARED TURBINE 9000 S.H.P.

BOILERS

2 WATER TUBE BOILERS FITTED WITH SUPERHEATER, AIR-HEATER, OIL BURNERS, DE SUPER-HEATER, FEED-WATER REGULATION, WATER GAUGE GLASS, FLANGE CONNECTIONS FOR REMOTE WATER LEVEL INDICATOR, SOOT BLOWERS & AIR HEATER BY-PASS DAMPER 745° SUPERHEAT - 41,000 LBS. STEAM PER HOUR.

PROPELLER

1 RIGHT HAND FOUR BLADED MANGANESE BRONZE PROPELLER - 21'-8" DIA. x 21.669

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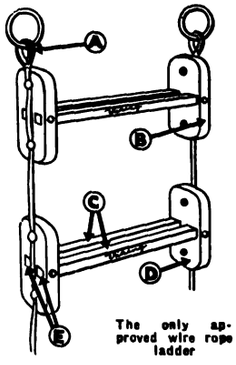
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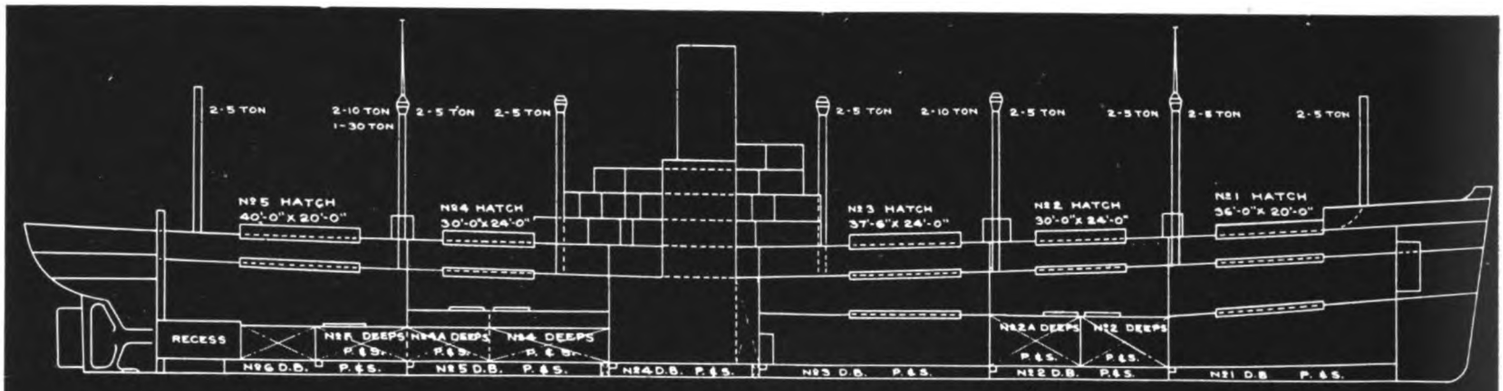
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C-3 TYPE VESSELS

INGALLS SHIPBLDG. CORP. - MISS.

LENGTH O.A.	492'-0"	GROSS TONNAGE (APPROX.)	7940
LENGTH B.P.	465'-0"	NET TONNAGE (APPROX.)	4700
BREADTH - MLD.	69'-6"	DEADWEIGHT TONNAGE (TOTAL)	12109
BREADTH - EXTREME		DISPLACEMENT TONNAGE @ 28'-6 7/16"	17600
DEPTH TO SHELTER DECK	42'-6"	DISPLACEMENT TONNAGE @ 10'-3 1/2"	5491
DEPTH TO SECOND DECK	33'-6"		
DRAFT - LOADED	28'-6 7/16"	PASSENGERS	6 ROOMS OF 2 - TOTAL 12
DRAFT - LIGHT	10'-3 1/2"	MAXIMUM TRIAL SPEED	16 1/2 Knots

CARGO CAPACITIES

HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	49680	38540
1	LOWER TWEEN DECK	50020	42880
1	UPPER TWEEN DECK	29190	25890
2	№2 DEEP TANK PORT	15490	12800
2	№2 " " STBD.	15490	12480
2	№2A " " PORT	17360	15480
2	№2A " " STBD.	17360	15150
2	LOWER TWEEN DECK	60810	55230
2	UPPER TWEEN DECK	38480	35200
3	HOLD	89330	77370
3	LOWER TWEEN DECK	REFER	38040
3	UPPER TWEEN DECK	47700	44350
4	№4 DEEP TANK PORT	20090	17270
4	№4 " " STBD.	20160	17290
4	№4A " " PORT	12310	9510
4	№4A " " STBD.	11750	8920
4	LOWER TWEEN DECK	56690	50020
4	UPPER TWEEN DECK	40980	37000
5	№5 DEEP TANK PORT	5460	3930
5	№5 " " STBD.	4700	3160
5	LOWER TWEEN DECK	73990	62330
5	UPPER TWEEN DECK	37750	34890
	TOTALS	714790	657730

SHIP'S CARGO LOCKERS

HOLD	COMPARTMENT	CU. FT. PORT	CU. FT. STBD.
1	№1 U.T.D. FR. 13-22	2870	2890
2	№2 " " 67-71	1110	1130
3	№3 " " 94-102	3250	3310
4	№4 " "122-131	3000	3060
5	№5 " "173-178	3100	3110
	TOTALS	13330	13500

SHIP'S STORAGE SPACE

DECK	COMPARTMENT	CU. FT.	
2ND & 3RD	BOSN'S STORES	4300	
CABIN	BAGGAGE LOCKER	308	
"	LOCKER	308	
SHELTER	BAGGAGE ROOM	290	
"	PAINT LOCKER	1260	
"	DECK LOCKER	700	
FLAT	STORES	9200	
	TOTAL	16366	

SHIP'S REFRIGERATED STORES

	BOX	CU. FT.	
	VEGETABLES		
	DAIRY		
	FISH		
	THAWING		
	MEAT		
	TOTAL		

REFRIGERATED CARGO

BOX		CU. FT. BALE	
1	PORT FR. 71-91	11000	
2	STBD. " " "	11000	
3	PORT " 93-102	2530	
4	STBD. " " "	1950	
	HATCH	11560	
	TOTAL	38040	

FUEL CONSUMPTION @ LOADED DRAFT

SPEED	BBLS/24 HRS	RANGE DAYS	
18.0	428	44	MAX. SPEED
16.5	320	57	CRUISING "
10.0	135	140	
9.0	120	157	
8.0	105	180	
6.5	95	210	

FUEL CAPACITY 418900 GALS.
PORT CONSUMPTION IDLE 30 BBLS/DAY
PORT CONSUMPTION CARGO 45 " / "

TANK CAPACITIES

FRAME	TANK	CAP. CU. FT.	100% BBLS. FUEL	100% TONS FUEL	100% TONS S.W.	100% TONS F.W.	98% TONS C.O.
	FORE PEAK	4252			121.5		
	№1 D.B. PORT	3034	540	81.4	86.7		
	№1 " STBD.	3034	540	81.4	86.7		
	№2 " PORT	4557	805	122.4	130.2		
	№2 " STBD.	5769	1030	155.4	165.4		
	№3 " PORT	8302	1478	222.8	237.2		
	№3 " STBD.	9320	1765	266.5	283.4		
	№4 " PORT	5280			151.0	146.7	
	№4 " STBD.	5521			157.6	153.3	
	№5 " PORT	5974	1063	160.4	170.7		
	№5 " STBD.	5761	1026	154.7	164.6		
	№6 " PORT	2058	366	55.2	58.8		
	№6 " STBD.	2058	366	55.2	58.8		
	AFTER PEAK	2807	500	75.2	80.2		80.2
	SETTLING PORT	2579	459	69.2			
	SETTLING STBD.	2579	459	69.2			
	FRESH WATER PORT	1245				34.6	
	FRESH WATER STBD.	1245				34.6	
	DISTILLED WATER	648				16.0	
	№2 DEEP PORT	15490			442.5		380.0
	№2 " STBD.	15490			442.5		380.0
	№2A " PORT	17360			496.0		424.8
	№2A " STBD.	17360			496.0		424.8
	№4 " PORT	20090			574.0		495.6
	№4 " STBD.	20160			576.0		497.3
	№4A " PORT	12310			351.7		303.4
	№4A " STBD.	11750			335.7		289.4
	№5 " PORT	5460			156.0		134.3
	№5 " STBD.	4700			134.3		115.6
	№5A " PORT	2404	437	65.0	68.7		60.2
	№5A " STBD.	1809	342	48.8	51.7		47.2
	TOTALS		11176	1682.6		387.2	3632.8

484 Tons

MANNING AUTHORITY

DECK		ENGINE		STEWARD - PURSER	
MASTER	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
CHIEF OFFICER	1	1ST ASST. ENG'R.	1	CHIEF COOK	1
		2ND ASST. ENG'R.	1	2ND COOK - BAKER	1
2ND OFFICER	1	3RD ASST. ENG'RS.	2	ASST. COOK	1
3RD OFFICERS	2	JR. ENGINEERS	3	PANTRY MESSMAN	1
CADETS	2	CADETS	2	SALOON MESSMEN	2
RADIO OPERATOR	1	REFER ENG'R.	1	P.O. MESSMAN	1
BOSN.	1	CHIEF ELECTRICIAN	1	CREW MESSMAN	1
MAINTENANCE	2	ASST. ELECTRICIAN	1	UTILITY MEN	2
CARPENTER	1	MAINTENANCE	1	TOTAL STEWARDS	11
A.B. SEAMEN	6	WATERTENDER-FIREMEN	3		
O. SEAMEN	3	OILERS	3	PURSER	1
TOTAL DECK	21	WIPERS	3		
		TOTAL ENG'RS.	23		
				TOTAL CREW 56	

GENERAL PARTICULARS

WINCHES
18 SINGLE GEARED ELECTRIC WINCHES 50 H.P. FOR 5 & 10 TON BOOMS
2 DOUBLE " " " " " " 30 " "

ENGINE
GEARED TURBINE 8500 N.H.P. @ 85 R.P.M. MAX. HORSEPOWER 9350

BOILERS
TWO MAIN BOILERS OF CROSS DRUM SECTIONAL HEADER STRAIGHT TUBE TYPE - INTERDECK SUPER HEATERS - SINGLE PASS - FUEL BUNKER "C" 450# W.P. 750° SUPER HEAT. 37500 lbs STEAM PER HOUR

PROPELLER
SOLID TYPE BRONZE 4 BLADE 21'-8" DIA. X 21.67' PITCH

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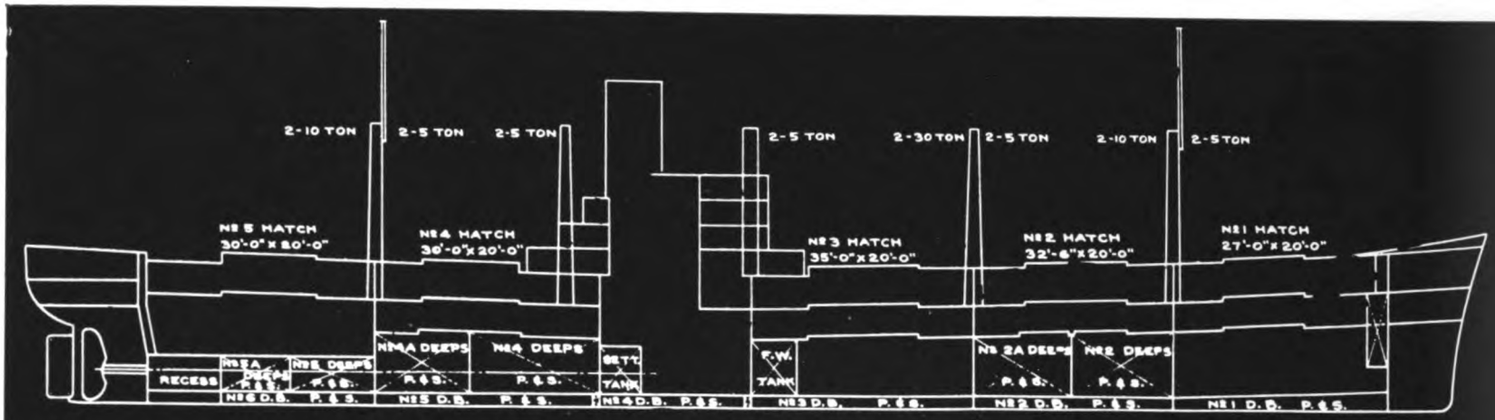
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C2-S-B1 TYPE VESSELS MOORE DRY DOCK CO. - CALIF.

LENGTH O.A.	459'-6⅞" 459'-2½"
LENGTH B.P.	435'-0"
BREADTH - MLD.	63'-0"
BREADTH - EXTREME	
DEPTH TO MAIN DECK - MLD.	40'-0"
DRAFT - LOADED	25'-9"
DRAFT - LIGHT	10'-11"

GROSS TONNAGE (APPROX.)	6220
NET TONNAGE (APPROX.)	3530
DEADWEIGHT TONNAGE (TOTAL)	8540
DISPLACEMENT TONNAGE @ 25'-9"	13860
DISPLACEMENT TONNAGE @ 10'-11"	5320
PASSENGERS	
MAXIMUM TRIAL SPEED	15½ Knots

CARGO CAPACITIES

HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	43762	37870
1	LOWER TWEEN DECK	22672	19756
1	UPPER TWEEN DECK	25548	23270
2	Nº2 DEEP TANK PORT	17820	14815
2	Nº2 " " STBD.	17812	14694
2	Nº2A " " PORT	17024	13443
2	Nº2A " " STBD.	16555	13367
2	LOWER TWEEN DECK	37808	32386
2	UPPER TWEEN DECK	37476	34752
3	HOLD	68034	39120
3	LOWER TWEEN DECK	43406	39290
3	UPPER TWEEN DECK	42708	61084
4	Nº4 DEEP TANK PORT	19013	16376
4	Nº4 " " STBD.	18613	16044
4	Nº4A " " PORT	13579	11500
4	Nº4A " " STBD.	13201	10965
4	LOWER TWEEN DECK	42174	36968
4	UPPER TWEEN DECK	42394	39740
5	LOWER TWEEN DECK	48080	41746
5	UPPER TWEEN DECK	31346	29000
	TOTALS	618585	546188

SHIP'S STORAGE SPACE

DECK	COMPARTMENT	CU. FT.	
SECOND	PAINT ROOM	360	
"	LAMP ROOM	441	
"	CARPENTER SHOP	817	
"	DECK LOCKER	254	
"	DRY STORES	1904	
"	RESISTOR HOUSE	280	
"	C.O.2 STOWAGE	1587	
"	PAINT LOCKER	360	
"	AMM. MAG. AFT	2460	
"	AMM. MAG. FOR'D.	3663	
"	BOSN'S STORES	4856	
THIRD	BOSN'S STORES	1920	
	STORES FLAT AFT	6805	
	TOTAL	25707	

SHIP'S REFRIGERATED STORES

	BOX	CU. FT.	
	VEGETABLES	1000	
	DAIRY	43	
	FISH	32	
	THAWING	340	
	MEAT	886	
		2501	

TANK CAPACITIES 100%

FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.	
	FORE PEAK	3156			90.1		
	Nº 1 D.B. PORT	3933	593	90.0	95.2		
	Nº 1 D.B. STBD.	3933	593	90.0	95.2		
	Nº 2 D.B. PORT	5766	1027	155.7	164.7		
	Nº 2 D.B. STBD.	5766	1027	155.7	164.7		
	Nº 3 D.B. PORT	7506	1337	202.7	214.4		
	Nº 3 D.B. STBD.	7456	1328	200.9	213.0		
	Nº 4 D.B. PORT	3918			111.9	108.8	
	Nº 4 D.B. STBD.	3918			111.9	108.8	
	Nº 5 D.B. PORT	5420	965	146.3	154.8		
	Nº 5 D.B. STBD.	5420	965	146.3	154.8		
	Nº 6 D.B. PORT	1648	293	44.5	47.0		
	Nº 6 D.B. STBD.	1648	293	44.5	47.0		
	AFTER PEAK	2626			75.8		
	Nº 2 DEEP PORT	17815			509.0		
	Nº 2 " STBD.	17312			494.6		
	Nº 2A " PORT	17024			486.4		
	Nº 2A " STBD.	16555			473.0		
	Nº 4 " PORT	18613			531.8		
	Nº 4 " STBD.	19013			543.2		
	Nº 4A " PORT	13201			377.1		
	Nº 4A " STBD.	13579			387.7		
	Nº 5 " PORT	4171	749	112.6	119.2		
	Nº 5 " STBD.	3829	682	103.4	109.4		
	Nº 5A " PORT	2110	375	56.9	60.3		
	Nº 5A " STBD.	1803	318	48.7	51.5		
	SETTLING PORT	2697	480	72.8			
	SETTLING STBD.	2697	480	72.8			
	DISTILLED WATER	976			27.8	27.1	
	FRESH WATER	6185			176.1	171.8	
	TOTALS		11499	1743.8		416.5	
	TOTAL LESS DEEPS		9381				

MANNING AUTHORITY

DECK		ENGINE		STEWARD - PURSER	
MASTER	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
CHIEF OFFICER	1	1ST ASST. ENG'R.	1	CHIEF COOK	1
2ND OFFICER	1	2ND ASST. ENG'R.	1	2ND COOK	1
3RD OFFICER	1	SR. 3RD ASST. ENG'R.	1	ASST. COOK	1
JR. 3RD OFFICER	1	JR. 3RD ASST. ENG'R.	1	PANTRY MESSMAN	1
CADETS	2	CADETS	2	SALOON MESSMEN	2
RADIO OPERATOR	1	CHIEF ELECTRICIAN	1	P.O. MESSMAN	1
BOSN.	1	ASST. ELECTRICIAN	1	CREW MESSMAN	1
MAINTENANCE	1	OILERS	3	UTILITY MEN	2
A. B. SEAMEN	6	FIREMEN - WATERTENDERS	3	TOTAL	11
ORD. SEAMEN	3	WIPERS	3	PURSER	1
TOTAL	19	TOTAL	18		
		TOTAL CREW	49		

FUEL CONSUMPTION @ LOADED DRAFT

SPEED	BBLS/24 HRS.	RANGE DAYS	
17	280	41	MAX. SPEED
15.5	240	47	CRUISING "
10			
9			
8			
6.5			

PORT CONSUMPTION IDLE 20 BBLS/DAY
PORT CONSUMPTION CARGO 35 " / "

GENERAL PARTICULARS

WINCHES
14 SINGLE GEARED ELECTRIC WINCHES FOR 5 AND 10 TON BOOMS
2 DOUBLE " " " " " 30 " "

ENGINE
GEARED TURBINE 6000 N.H.P. @ 92 R.P.M. MAXIMUM HORSE POWER 6600

PROPELLER
SOLID TYPE BRONZE 4 BLADE 19'-0" DIA. 19.105' PITCH

NOTE:
THIS TYPE VESSEL HAS BEEN BUILT WITH 8500 N.H.P. OR C-3 TYPE POWER.
WITH THIS POWER THE CRUISING SPEED IS APPROX. 18.5 KNOTS WITH MAX. SPEED IN EXCESS OF 20 KNOTS.
THE FUEL CONSUMPTION IS SLIGHTLY LESS THAN THE C-3 TYPE.

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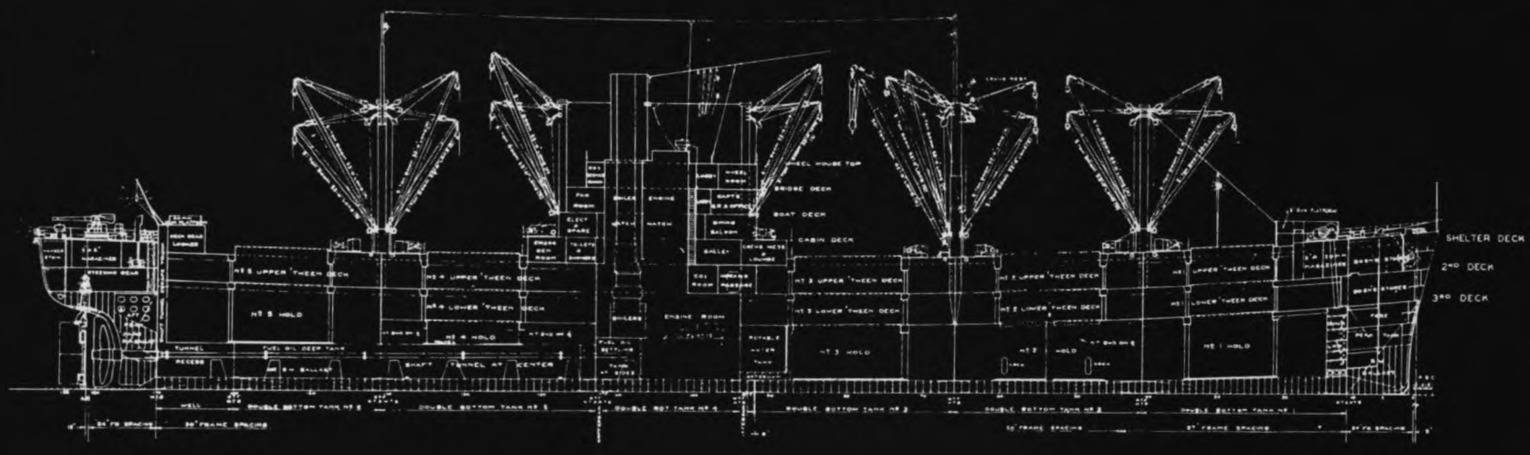
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SUMMARY OF CARGO CAPACITIES

BETWEEN FRAMES	SPACE	BALE NET CU FT	GRAIN NET CU FT	LONG'L C.G. AFT F.P. (BALE)	VERT. C.G. ABV B.L. (BALE)
11-41	№ 1 UPPER 'TWEEN DECK	24094	25678	61·05'	40·77'
41-66	№ 2 " " "	32178	33785	121·45'	37·71'
66-94	№ 3 " " "	36331	37968	185·52'	36·34'
113-141	№ 4 " " "	36094	37789	304·71'	36·73'
141-170	№ 5 " " "	28897	30621	372·02'	38·24'
	TOTAL UPPER 'TWEEN DECKS	157594	165841		
11-41	№ 1 LOWER 'TWEEN DECK	20767	22491	62·74'	30·21'
41-66	№ 2 " " "	32203	34396	121·51'	27·56'
66-94	№ 3 " " "	38727	40553	186·79'	26·30'
113-141	№ 4 " " "	37290	39409	303·90'	26·82'
	TOTAL LOWER 'TWEEN DECKS	128987	136849		
14-41	№ 1 HOLD	37854	41013	65·42'	15·17'
41-54	№ 2 " PORT	14039	16406	106·30'	13·54'
41-54	№ 2 " STBD	13372	16399	106·32'	13·55'
54-66	№ 2 " PORT	14705	16166	136·32'	12·88'
54-66	№ 2 " STBD	14091	16178	136·29'	12·88'
66-94	№ 3 "	60591	63975	182·20'	12·59'
113-141	№ 4 "	59334	63152	303·50'	13·39'
141-170	№ 5 "	42257	46866	369·46'	24·89'
	TOTAL HOLDS	256243	280155		
	TOTAL, ALL CARGO SPACES	542824	582845		

SUMMARY OF TANK CAPACITIES
FUEL OIL & SALT WATER BALLAST

BETWEEN FRAMES	TANK	GALLONS 100% FULL	BBLS. F.O. 98% FULL	TONS F.O. 98% FULL	TONS S.W. 100% FULL	LONG'L C.G. AFT F.P. 100% FULL	VERT. C.G. ABV. B.L. 100% FULL
STEM-11	FORE PEAK	25777			98·46	13·69'	16·06'
11-41	№ 1 DBL BOTT (P)	25527	595·62	89·83	97·50	62·79'	2·66'
11-41	№ 1 " " (S)	24890	580·76	87·59	95·07	63·23'	2·67'
41-66	№ 2 " " INBD (P)	25991	606·45	91·46	99·28	121·41'	2·00'
41-66	№ 2 " " INBD (S)	25991	606·45	91·46	99·28	121·41'	2·00'
41-66	№ 2 " " OUTBD (P)	17508	408·52	61·61	66·87	124·82'	2·22'
41-66	№ 2 " " OUTBD (S)	17508	408·52	61·61	66·87	124·82'	2·22'
66-93	№ 3 " " INBD (P)	29840	696·26	105·01	113·97	185·75'	2·00'
66-93	№ 3 " " INBD (S)	29840	696·26	105·01	113·97	185·75'	2·00'
66-93	№ 3 " " OUTBD (P)	25377	592·12	89·30	96·93	185·90'	2·14'
66-93	№ 3 " " OUTBD (S)	25377	592·12	89·30	96·93	185·90'	2·14'
113-141	№ 5 " " INBD (P)	25596	597·24	90·07	97·78	301·82'	1·99'
113-141	№ 5 " " INBD (S)	25596	597·24	90·07	97·78	301·82'	1·99'
113-141	№ 5 " " OUTBD (P)	17702	413·05	62·29	67·62	300·18'	2·31'
113-141	№ 5 " " OUTBD (S)	17702	413·05	62·29	67·62	300·18'	2·31'
141-160	№ 6 " " (P)	12384	288·95	43·58	47·30	358·62'	2·25'
141-160	№ 6 " " (S)	12384	288·95	43·58	47·30	358·62'	2·25'
107-113	FUEL OIL SETTLING (P)	23064	538·17	81·17		261·95'	9·44'
107-113	FUEL OIL SETTLING (S)	23064	538·17	81·17		261·95'	9·44'
141-160	FUEL OIL DEEP (P)	49936	1165·17	175·73	190·74	359·21'	9·90'
141-160	FUEL OIL DEEP (S)	40327	940·95	141·91	154·04	358·22'	10·04'
170-STERN	AFT PEAK	24117			92·12	421·45'	25·46'
	TOTAL		11564·02	1744·04	1907·43		

C2-S-AJ 1

PRINCIPAL PARTICULARS

LENGTH, OVERALL		459'-1"
LENGTH, B.P. ON 25'-9" D.W.L.		435'-0"
BEAM, MOLDED		63'-0"
DEPTH, MOLDED TO SHELTER DECK AT SIDE		40'-0"
DEPTH, MOLDED TO 2ND DECK AT SIDE		31'-6"
ENGINE - GEARED TURBINES S.H.P. NORMAL		6000
BOILERS - 2		450# PRESS
PROPELLER	19'-0" DIA. 19'-10½" PITCH	
GROSS TONNAGE	U.S.	8258.27
NET TONNAGE	U.S.	4832.33
GROSS TONNAGE	PANAMA	8373.03
NET TONNAGE	PANAMA	5647.94
GROSS TONNAGE	SUEZ	8376.74
NET TONNAGE	SUEZ	6141.06

MISCL. SHIPS STORE SPACES

BETWEEN FRAMES	SPACE	NET CU FT
STEM-11	BOSN'S STORES 2ND DK	2900
" -11	BOSN'S STORES 3RD DK	1529
99-106½	DRY STORES	1432
184½-STERN	HAWSER STOWAGE	877
	TOTAL	6738

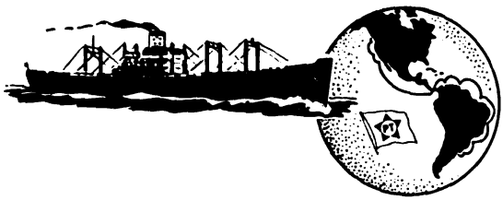
SHIPS REFRIGERATED STORES

SPACE	NET CU FT
MEAT ROOM	670.
VEGETABLE ROOM	898.
DAIRY PRODUCTS	117.
FISH	76.
THAWING ROOM	337.
TOTAL	2098.

FRESH WATER

BETWEEN FRAMES	TANK		GALLONS 100% FULL	TONS F.W. 100% FULL	LONG'L C.G. AFT F.P.	VERT. C.G. ABV. B.L.
88-94	POTABLE WATER		46841	173·95	214·50'	14·03'
88-94	DISTILLED WATER		7246	26·91	214·50'	13·03'
94-112	№ 4 DBL BOTT INBD (P)	REC BOILER FEED WATER	19893	73·87	244·50'	2·03'
94-112	№ 4 " " INBD (S)	" "	19027	70·66	244·20'	1·97'
94-106	№ 4 " " OUTBD (P)	" "	10668	39·62	237·16'	2·18'
94-106	№ 4 " " OUTBD (S)	" "	11098	41·21	236·82'	2·16'
	TOTAL		114773	426·22		

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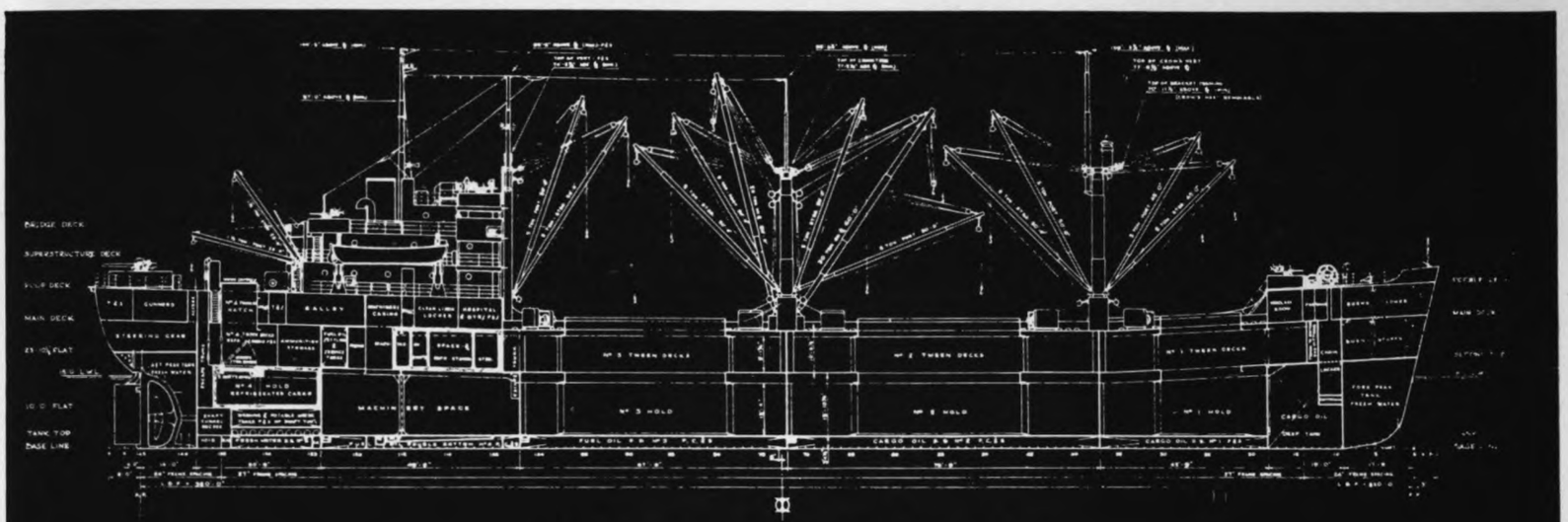


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DRY CARGO

SPACE	FRAMES	CENTER OF GRAVITY FROM ℄	CENTER OF GRAVITY FROM BL	CAPACITY - CUBIC FEET GRAIN	CAPACITY - CUBIC FEET BALE
Nº 1 TWEEN DECKS	8-37	+107.28	25.70	26740	24050
Nº 1 HOLD	18-37	+101.00	11.70	28025	24620
TOTAL - HOLD Nº 1				54765	48670
Nº 2 TWEEN DECKS	37-72	+ 41.12	24.35	42290	39295
Nº 2 HOLD	37-72	+ 41.20	10.82	60545	55125
TOTAL - HOLD Nº 2				102835	94420
Nº 3 TWEEN DECKS	72-104	- 34.20	24.38	38680	36045
Nº 3 HOLD	72-102	- 31.75	10.81	52095	47140
TOTAL - HOLD Nº 3				90775	83185
Nº 4 TRUNKED HATCH	131-136	-135.50	31.05	1460	1455
GRAND TOTAL - DRY CARGO				249835	227730

FUEL OIL & WATER BALLAST

TANK	FRAMES	CENTER OF GRAVITY FROM ℄	CENTER OF GRAVITY FROM BL	DIESEL OIL 98% FULL GALLONS	DIESEL OIL 98% FULL BARRELS	DIESEL OIL 98% FULL TONS	SW BALLAST 100% FULL TONS
FUEL OIL							
DOUBLE BOTTOM Nº 3 P	72-102	-31.48	1.61	20765	494.5	65.4	80.9
" " Nº 3 S	72-102	-31.48	1.61	20765	494.5	65.4	80.9
" " Nº 3 C	72-102	-32.00	1.56	30215	719.5	95.2	117.8
" " Nº 4 P	102-124	-85.42	1.70	10110	240.5	31.8	39.4
" " Nº 4 S	102-124	-86.42	1.69	9990	238.0	31.5	38.9
" " Nº 4 C	102-124	-92.89	1.54	14530	346.0	45.8	56.6
DAILY SERVICE TANK P	121-124	-111.86	25.21	2300	55.0	7.2	—
" " S	121-124	-111.86	25.21	2300	55.0	7.2	—
SETTLING TANK P	121-124	-111.86	25.28	2340	55.5	7.4	—
" " S	121-124	-111.86	25.28	2340	55.5	7.4	—
TOTAL FUEL OIL				115655	2754.0	364.3	—
RESERVE FUEL OIL OR CARGO OIL							
DOUBLE BOTTOM Nº 1 P	18-37	+ 98.99	1.70	12265	292.0	38.6	47.8
" " Nº 1 S	18-37	+ 98.12	1.69	12660	301.5	39.9	49.3
" " Nº 2 P	37-72	+ 40.24	1.62	25415	557.5	73.8	91.3
" " Nº 2 S	37-72	+ 40.24	1.62	25415	557.5	73.8	91.3
" " Nº 2 C	37-72	+ 41.13	1.56	33400	845.0	111.3	138.0
DEEP TANK	9-18	+131.02	12.42	50845	1210.5	160.2	198.2
TOTAL RESERVE FUEL OIL OR CARGO OIL				158000	37620	4978	—
GRAND TOTAL - DIESEL OIL AND WATER BALLAST				273655	6516.0	862.1	1030.4

FRESH WATER

TANK	FRAMES	CENTER OF GRAVITY FROM ℄	CENTER OF GRAVITY FROM BL	100% FULL GALLONS	100% FULL TONS
WASHING & POTABLE WATER - PORT	124-134	-124.18	7.60	6870	25.5
" " " - STBD	124-132	-122.89	7.65	4515	16.8
TOTAL WASHING & POTABLE WATER				11385	42.3
ENGINE CIRCULATING WATER - D. B. Nº 5	125-134	-128.11	1.71	7560	28.1
FOREPEAK	STEM-9	+148.00	14.31	15340	57.7
AFTERPEAK	138-STERN	-151.87	18.64	12160	45.1
GRAND TOTAL - FRESH WATER				46645	173.2

DIMENSIONS & DATA

LENGTH OVER ALL	338'-8⅜"
LENGTH ON DESIGNED LOAD WATERLINE	320'-0"
LENGTH BETWEEN PERPENDICULARS	320'-0"
BREADTH, MOLDED	50'-0"
BREADTH, EXTREME	50'-3⅜"
DEPTH, MOLDED, TO TOP OF MAIN DECK PLATING AT SIDE	29'-0¾"
DRAFT, MOLDED, TO DESIGNED LOAD WATERLINE	18'-0"
DRAFT TO BOTTOM OF KEEL AT DESIGNED LOAD WATERLINE	18'-0 9/32"
DRAFT TO SUBDIVISION LOAD LINE, MOLDED	21'-0"
DRAFT TO BOTTOM OF KEEL AT SUMMER L. L. (A.B.S.)	
CAMBER FLAT ℄ LEVEL TO 8'-6" OFF ℄, 7¾" DROP IN 15'-6" OF OUTER DECK.	
SHEER FORWARD - DECKS RISE 4'-0" IN STRAIGHT LINE AT ℄ FROM FR. 35½ TO F.P.	
SHEER AFT - DECKS RISE 2'-0" IN STRAIGHT LINE AT ℄ FROM FR. 104 TO A.P.	
GROSS TONNAGE	
NET TONNAGE	

MAIN ENGINE: SINGLE ACTING SOLID INJECTION DIESEL WITH NORMAL RATED SHAFT HORSEPOWER OF 1700 AT 180 R.P.M.

DECK MACHINERY:
10 SINGLE SPEED 50 H.P. UNIT WINCHES ON MAIN DECK AT 5 TON BOOMS.
4 TWO SPEED 50 H.P. UNIT WINCHES ON MAIN DECK AT 20 AND 30 TON BOOMS.
2 TWO SPEED 50 H.P. UNIT WINCHES ON POOP DECK FOR REFRIGERATED CARGO HANDLING AND FOR WARPING.
ONE HORIZONTAL SHAFT 60 H.P. WINDLASS WITH 2 WARPING HEADS.

SHIP'S STORES

SPACE	LOCATION DECK	LOCATION FRAMES	LOCATION SIDE	BALE CUBIC FEET
MEAT ROOM	SECOND	104-107	S	495
FRUIT ℄ VEGETABLE ROOM	"	107-112	S	800
DAIRY ROOM	"	112-114	S	275
FISH ROOM	"	114-116	S	125
HANDLING AREA	"	107-114	S	545
TOTAL SHIP'S REFRIGERATED STORES				2240

BOSN'S STORES	MAIN	A-9	℄	2240	1745
CANVAS ℄ AWNING ROOM	"	9-12	P	680	
CARPENTER SHOP ℄ STORES	"	9-12	S	690	
PAINT & OIL ROOM	"	14-18	P	585	
LAMP ROOM	"	14-18	S	585	
BOSN'S STORES	SECOND	0-9	℄	1770	
ENGINEERS' STORES	"	122-124	P	435	
DRY STORES	"	115-124	P	1770	
ARMED GUARD GEAR LOCKER	MAIN	5-9	S		435
TOTAL SHIP'S GENERAL STORES				8765	

REFRIGERATED CARGO

SPACE	FRAMES	CENTER OF GRAVITY FROM ℄	CENTER OF GRAVITY FROM BL	BALE CUBIC FEET
Nº 4 TWEEN DECKS - PORT	124-138	129.59	25.58	2700
Nº 4 TWEEN DECKS - STBD	124-138	-129.13	25.56	2610
Nº 4 HOLD	124-136	-127.08	14.76	4520
TOTAL REFRIGERATED CARGO				9830

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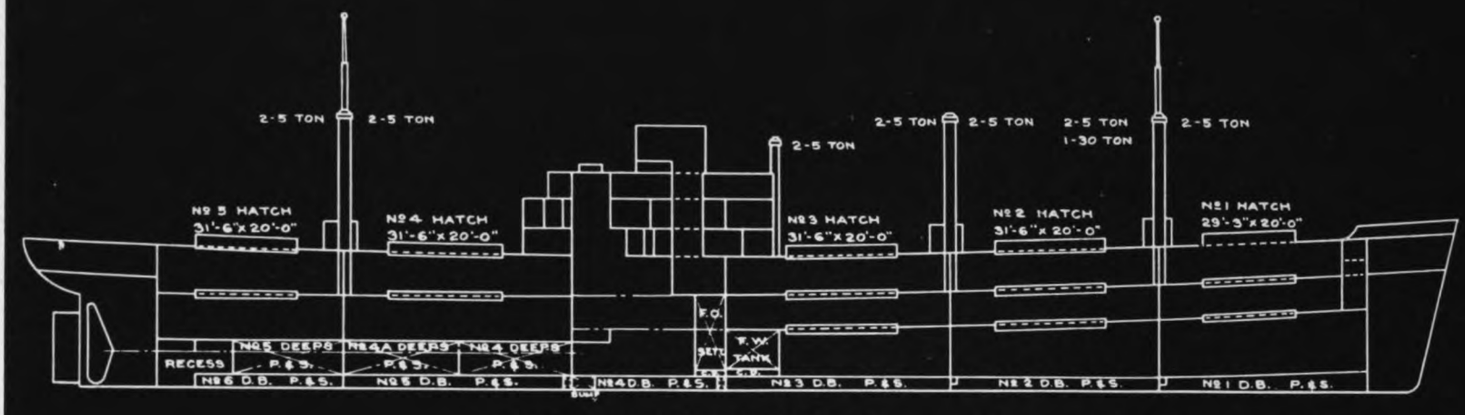
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LENGTH O. A.	417'-9"	GROSS TONNAGE (APPROX.)	6710
LENGTH B. P.	395'-0"	NET TONNAGE (APPROX.)	3930
BREADTH - MLD.	60'-0"	DEADWEIGHT TONNAGE (TOTAL)	9047
BREADTH - EXTREME	60'-2 3/8"	DISPLACEMENT TONNAGE @ 27'-7 3/8"	12875
DEPTH TO MAIN DECK - MLD.	37'-6"	DISPLACEMENT TONNAGE @ 9'-6 3/16"	3828
DRAFT - LOADED	27'-7 3/8"		
DRAFT - LIGHT	9'-6 3/16"	PASSENGERS	6 ROOMS OF 2 - TOTAL 12

CARGO CAPACITIES

HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	39673	34492
1	LOWER TWEEN DK.	19124	15922
1	UPPER TWEEN DK.	21501	19245
2	HOLD	64398	57504
2	LOWER TWEEN DK.	32486	29669
2	UPPER TWEEN DK.	32556	30002
3	HOLD	59314	53002
3	LOWER TWEEN DK.	35886	31116
3	UPPER TWEEN DK.	37150	33805
4	HOLD	55003	49167
4	TWEEN DK.	33919	31183
5	HOLD	29595	24315
5	TWEEN DK.	25154	22952
	TOTALS	485761	436533

SHIP'S STORAGE SPACE

DECK	COMPARTMENT	CU. FT.	
SECOND	BOS'N'S. STORES	3167	
THIRD	BOS'N'S. STORES	1687	
MAIN	DRY STORES	2069	
SECOND	CARPENTER SHOP	589	
SECOND	PAINT ROOM	848	
MAIN	SLOP CHEST	316	
	MISC. LOCKERS	694	
	TOTAL	9370	

SHIP'S REFRIGERATED STORES

	BOX	CU. FT.	
	TOTAL	3543	

FUEL CONSUMPTION @ LOADED DRAFT

SPEED	BBLS/24HRS	RANGE DAYS	
16	180	70	MAX. SPEED
14.5	155	84	CRUISING "
10			
9			
8			
6.5			

PORT CONSUMPTION IDLE 12 BBLS/DAY
PORT CONSUMPTION CARGO 25 " "

TANK CAPACITIES 100%

FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS. S.W.	TONS F.W.	
	FORE PEAK	2677			76.5		
	№1 D.B. PORT	2895	515	77.7	82.7		
	№1 D.B. STBD.	2895	515	77.7	82.7		
	№2 D.B. PORT	5338	950	143.3	152.5		
	№2 D.B. STBD.	5338	950	143.3	152.5		
	№3 D.B. PORT	6437	1146	172.8	183.9		
	№3 D.B. STBD.	6437	1146	172.8	183.9		
	№4 D.B. PORT	3658			104.5	101.6	
	№4 D.B. STBD.	3749			107.1	104.1	
	№5 D.B. PORT	3655	651	98.1	104.4		
	№5 D.B. STBD.	3594	640	96.5	102.7		
	№6 D.B. PORT & STBD.	2122	378	56.9	60.6		
	AFTER PEAK	3664			104.7		
	SETTLING PORT	1457	259	39.1			
	SETTLING STBD.	1457	259	39.1			
	№4 DEEP PORT	8012	1427	215.2	228.9		
	№4 DEEP STBD.	6939	1235	186.3	198.2		
	№4A DEEP PORT	5026	895	134.9	143.6		
	№4A DEEP STBD.	4377	779	117.5	125.0		
	№5 DEEP PORT	3139	559	84.3	89.7		
	№5 DEEP STBD.	2390	425	64.1	68.3		
	DISTILLED WATER	535			15.3	14.8	
	FRESH WATER	4401			125.8	122.3	
	TOTALS		12729	1919.6		342.8	
	TOTALS LESS DEEPS		7409				

MANNING AUTHORITY

DECK		ENGINE		STEWARD-PURSER	
MASTER	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
CHIEF OFFICER	1	1ST ASST. ENG'R.	1	CHIEF COOK	1
2ND OFFICER	1	2ND ASST. ENG'R.	1	2ND COOK	1
3RD OFFICER	1	SR. 3RD ASST. ENG'R.	1	ASST. COOK	1
JR. 3RD OFFICER	1	JR. 3RD ASST. ENG'R.	1	PANTRY MESSMAN	1
RADIO OPERATOR	1	CADETS	2	SALOON MESSMAN	1
BOS'N.	1	CHIEF ELECTRICIAN	1	P.O. MESSMAN	1
MAINTENANCE	1	ASST. ELECTRICIAN	1	CREW MESSMAN	1
A.B. SEAMEN	6	OILERS	3	UTILITY MEN	2
O. SEAMEN	3	FIREMEN-WATERTENDERS	3	TOTAL	10
CADETS	2	WIPERS	3	PURSER	1
TOTAL DECK	19	TOTAL ENG.	18		
				TOTAL CREW 48	

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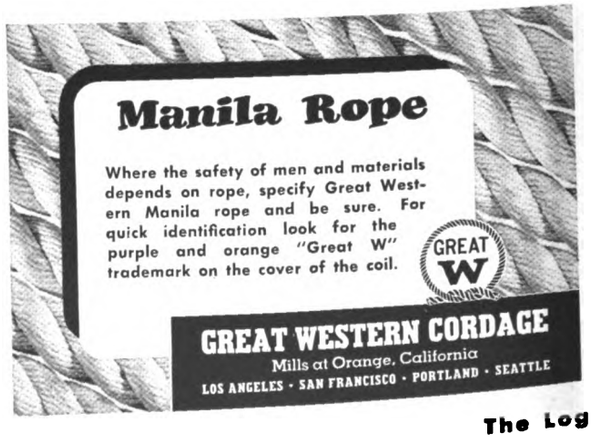
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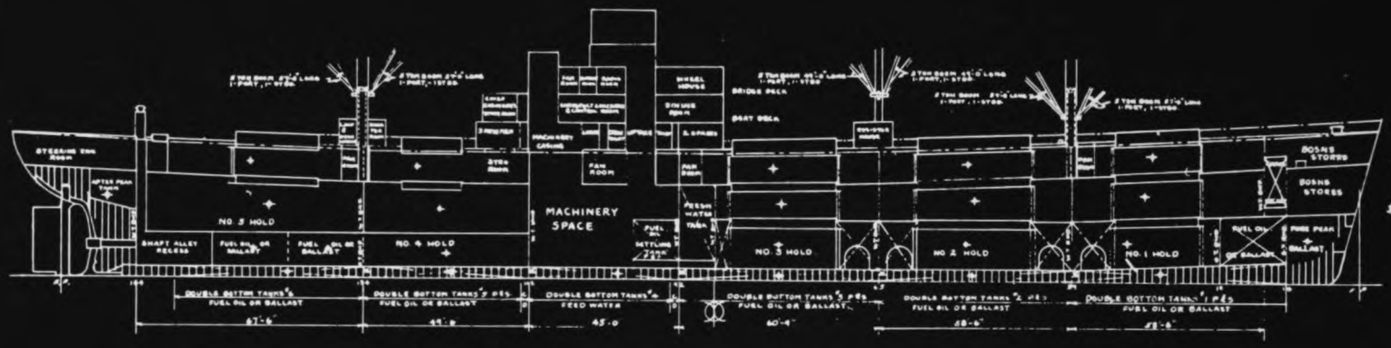
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C1A CARGO VESSEL

SUMMARY OF CARGO CAPACITIES

BETWEEN FRAMES		BALE NET CU FT	GRAIN NET CU FT
13-39	No.1 UPPER TWEEN DECKS	24330	24990
39-65	No.2 " " "	31150	31404
65-92	No.3 " " "	32670	32988
118-134	No.4 " " "	19290	19618
134-164	No.5 " " "	27660	28415
	TOTAL UPPER TWEEN DECKS	135100	137415
13-39	No.1 LOWER TWEEN DECKS	30180	31653
39-65	No.2 " " "	38370	39375
65-92	No.3 " " "	32405	32985
112-134	No.4 " " "	40450	41389
134-164	No.5 " " "	37420	39861
	TOTAL LOWER TWEEN DECKS	178825	185263
19-39	No.1 HOLD	25450	26798
39-65	No.2 "	46170	47561
65-92	No.3 "	45530	46894
112-134	No.4 "	17920	19085
	TOTAL HOLDS	135070	140338
	TOTAL ALL CARGO SPACES	448995	463096

PRINCIPAL PARTICULARS

LENGTH OVERALL	412'-3"
LENGTH BETWEEN PERPENDICULARS	390'-0"
BREADTH MOLDED	60'-0"
DEPTH MOLDED TO SHELTER DECK AT SIDE	37'-6"
DEPTH MOLDED TO SECOND DECK AT SIDE	28'-3"
BOILERS 2 - B&W	440# PRESSURE
PROPELLER 1	17'-0" DIA. 18'-4½ PITCH
PASSENGER	4
GROSS TONNAGE U.S.	5093.25
NET TONNAGE U.S.	2859
GROSS TONNAGE PANAMA	7120.73
NET TONNAGE PANAMA	4960.61
GROSS TONNAGE SUEZ	7124.07
NET TONNAGE SUEZ	5448.32

MISCL. SHIP'S STORES SPACES

BETWEEN FRAMES	SPACE	NET CU FT
STEM-13	3RD DECK BOSN'S STORES	3,850
STEM-13	2ND " BOSN'S STORES	5,140
95-101	2ND " DRY STORES	340
114-118	2ND " DRY STORES	718
102½-105	SHELTER DK. CREWS BAGGAGES	280
95-99	BOAT DK LINEN ROOM	380
134-137	SHELTER DK. DECK STORES	862
	TOTAL	11570

SUMMARY OF TANK CAPACITIES

FUEL OIL & SALT WATER BALLAST

BETWEEN FRAMES	TANK	GALLONS 100% FULL	BBLS F.O. 97% FULL	TONS F.O. 99% FULL	TONS S.W. 100% FULL
STEM-10	FORE PEAK	13800			52.71
10-39	No1 DBL. BOTTOM (PORT)	24040	555.2	83.14	95.74
10-39	No1 " " (STBD)	24040	555.2	83.14	95.74
39-65	No2 " " (PORT)	31390	863.6	130.24	142.82
39-65	No2 " " (STBD)	31390	863.6	130.24	142.82
65-92	No3 " " (PORT)	42620	984.4	148.46	163.14
65-92	No3 " " (STBD)	42620	984.4	148.46	163.14
113-134	No5 " " (PORT)	22680	523.8	79.00	86.67
113-134	No5 " " (STBD)	21840	504.4	76.08	83.42
134-159	No6 " "	22300	515.1	77.68	85.65
159-STERN	AFT PEAK	33470			127.85
10-19	No1 DEEP TANK	42570	983.2	148.30	162.62
134-149	No2 " " (PORT)	26160	604.2	91.12	99.99
134-144	No3 " " (STBD)	22410	517.6	78.06	85.61
144-154	No4 " " (PORT)	16050	307.6	53.91	61.31
144-154	No5 " " (STBD)	12300	284.1	42.93	46.99
92-98	FUEL OIL SETTLING TANK P&S.	16592	383.2	57.80	
	TOTAL	458272	9429.6	1430.76	1692.22

SHIP'S REFRIGERATOR STORES

SPACE	NET CU. FT
VEGETABLES	633
DAIRY PRODUCTS	145
FISH	136
ICE ROOM	140
THAWING ROOM	438
MEAT	544
TOTAL	2036

FRESH WATER

BETWEEN FRAMES	TANK	GALLONS 100% FULL	TONS F.W. 100% FULL
87-92	POTABLE WATER AFT END No3 HOLD	36440	135.70
93-112	No4 DBL BOTTOM RES. BLR. FEED (PORT)	24840	92.50
93-112	No4 DBL BOTTOM RES. BLR. FEED (STBD)	25180	93.77
87-92	DISTILLED WATER AFT END No3 HOLD (PORT)	4205	15.66
	TOTAL	90665	337.65

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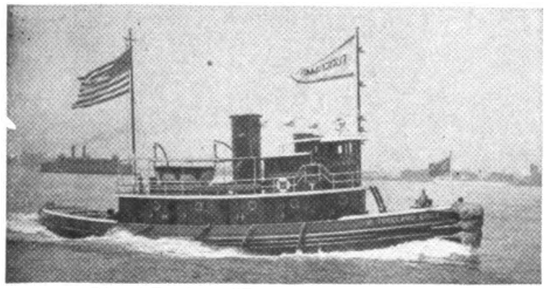
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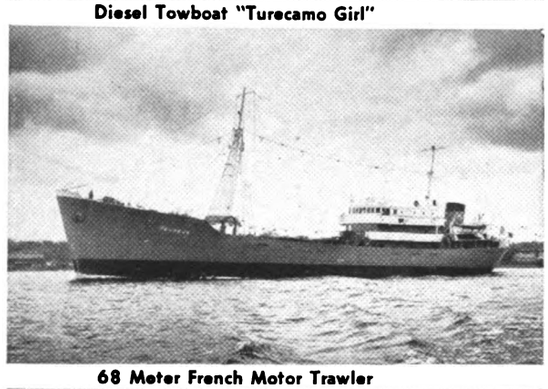
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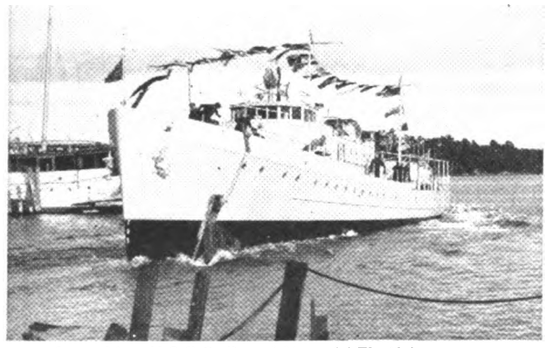
Diesel Towboat "Turecamo Girl"



68 Meter French Motor Trawler



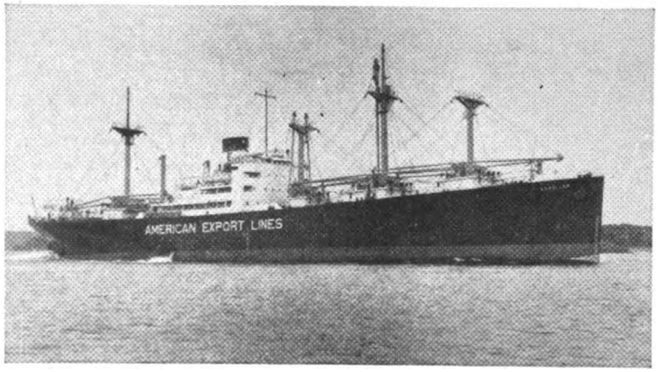
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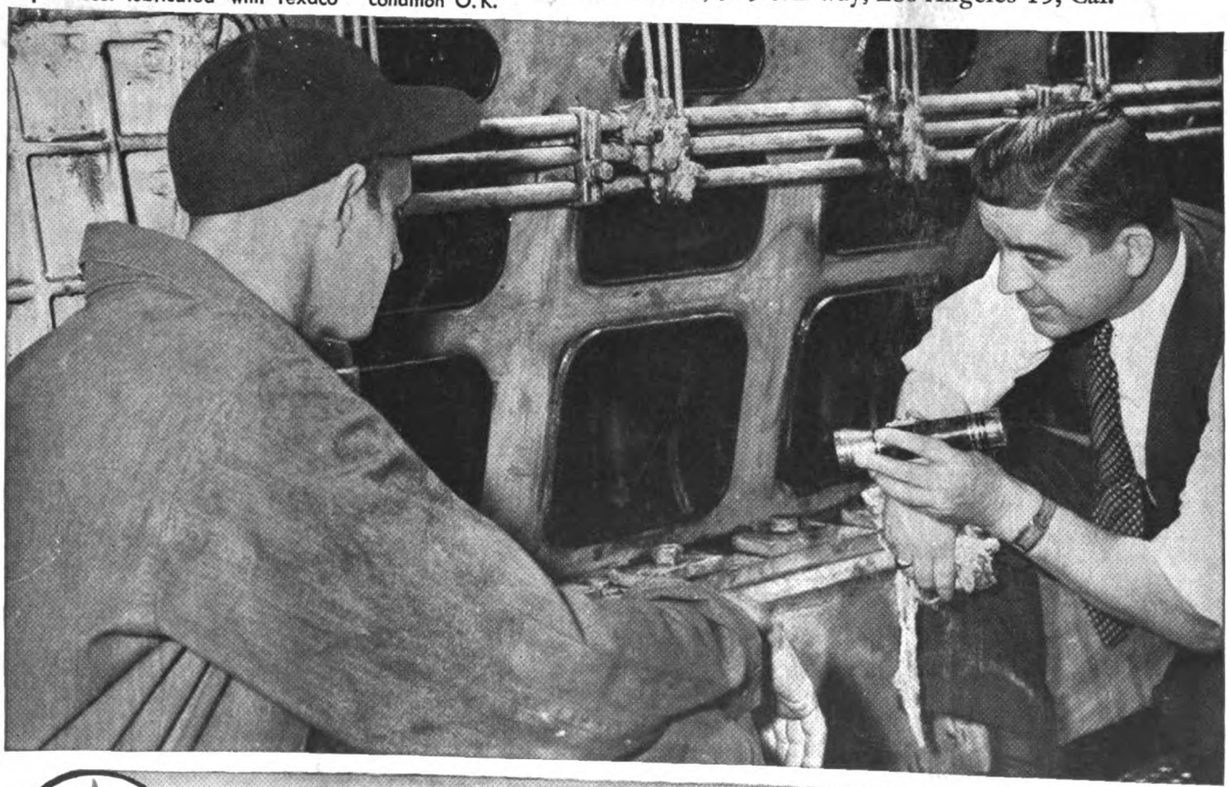
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TEXACO Marine Lubricants

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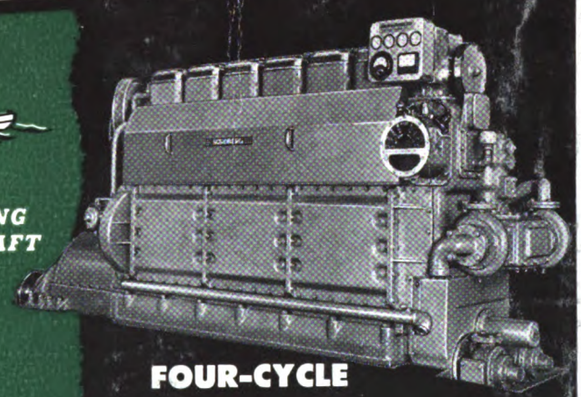
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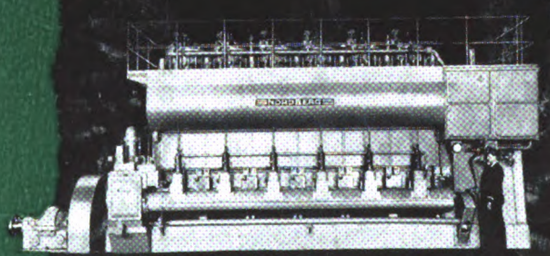
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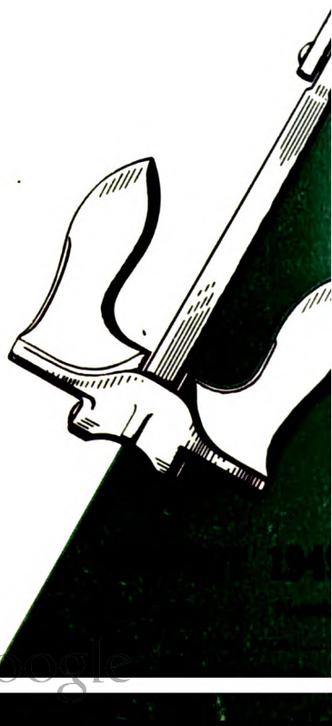


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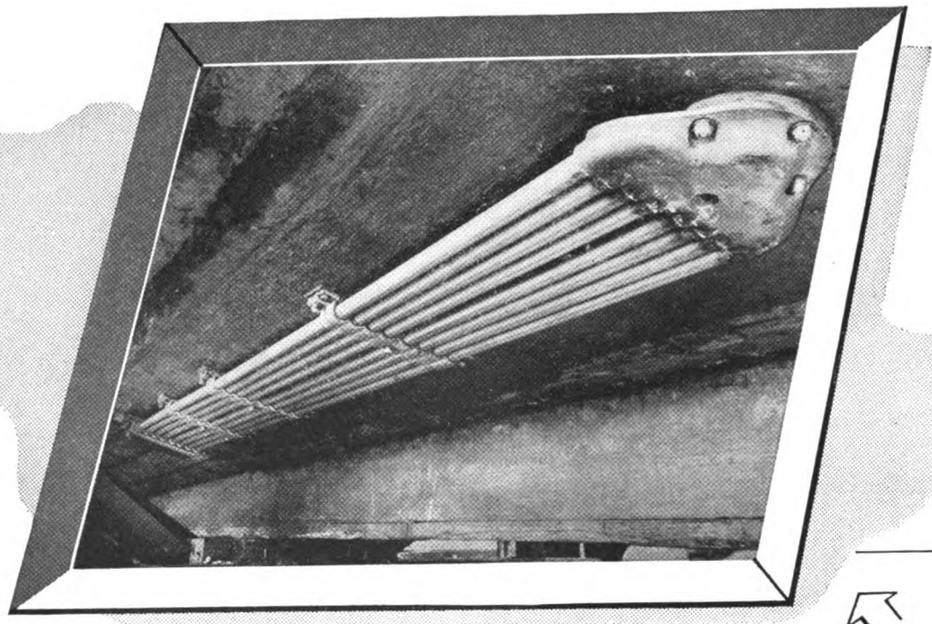
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But . . . unless your cooling system is adequately rustproof and corrosion-resistant, it can cause more trouble than it cures!

A good way to insure your closed outboard cooling system against expensive corrosion failures and rust fouling is to specify *Monel** tubing for under-water heat exchangers and inboard piping. For, in addition to being 100% rustproof and highly resistant to salt-water corrosion, Monel is *actually stronger than structural steel* . . . extra protection against under-water damage. Monel is galvanically neutral to the bronze through-hull fittings and return bends.

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Your local shipyard or boat builder will be glad to quote on rustproof *Monel* tubing for keel coolers; also Monel propeller shafts, fittings, and accessories. Why not investigate . . . soon?

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Keel condenser of a Walter Clean-Flo Cooler, installed on the fishing boat, Ventura, *of City Island, N. Y., owned by Capt. Sol Newman and partners. The tubing is strong, light-walled seamless Monel (1¼ in. O.D. with 0.065 in. wall). Fittings are cast bronze, secured to the wood hull with Monel bolts, nuts, and "K"* Monel lock washers.* Ventura's *Monel propeller shaft has been in service for the past ten years. Her planks have been refastened with Anchorfast nails of Monel, driven between the old rusted galvanized fastenings.*

Walter Clean-Flo Coolers made by G. WALTER MACHINE CO., *84 Cambridge Ave., Jersey City 7, N. J.*

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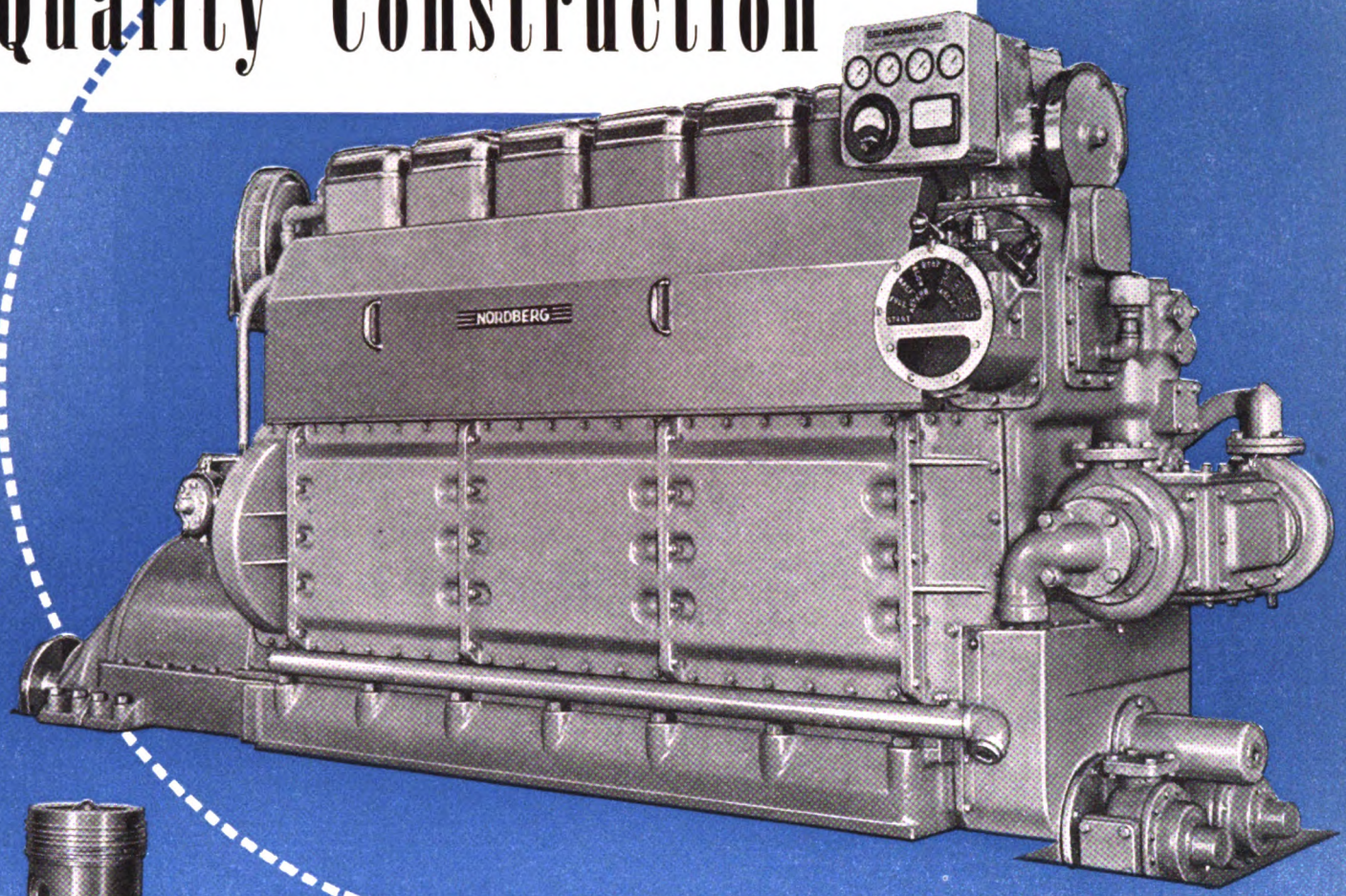
A Monel-tubed keel condenser installed on the 45-ft. tug, Charles E. Gray, *of Brunswick, Ga. Return bend and through-hull connection are bronze. The* Charles E. Gray *is also equipped with a rustproof, corrosion-resistant Monel propeller shaft, and Monel hull fastenings.*

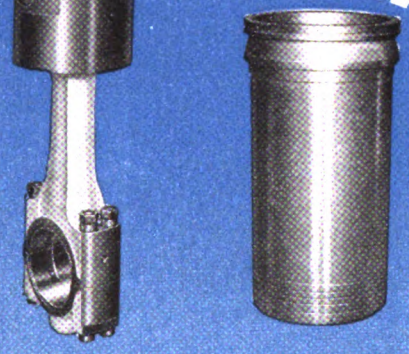
Cooling system fabricated from standard I.P.S. Monel pipe, and installed by BRUNSWICK MARINE CONSTRUCTION CORP., *Brunswick, Georgia.*

The LOG, published monthly, semi-monthly in July, by MILLER FREEMAN PUBLICATIONS OF CALIFORNIA, 124 West Fourth Street, Los Angeles 13, California. on the 25th of each preceding month. Executive, Advertising and Editorial Offices, 121 Second Street, San Francisco 5, California. Subscription (including Yearbook Number) in United States and Canada, $3.00 per year or $5.00 for two years; Foreign $4.00 per year. 25c per copy. Yearbook, $1.00 single copy. Entered as second-class matter February 5, 1946 at the post office Los Angeles, California, under act of March 3, 1879. Postmaster: Please send Notice 3578 to The LOG, 121 Second Street, San Francisco 5.

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5M549

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TAKE a look *"inside"* before you decide which Diesel engine you buy . . . get the facts about the construction details that go to make up the over-all performance and dependability of *any* engine.

In the case of Nordberg Diesel Marine Engines, you will find quality construction throughout — every detail has been designed and built to give years of dependable, low-cost operation. For proof, we cite the enviable record established by Nordberg Engines in all classes of marine service, from small fishing craft up through large sea-going vessels.

Nordberg Diesels for main propulsion and auxiliary service are built in two and four-cycle types, in sizes from 10 to 8500 H.P.

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Have been able to pick up targets in all weather conditions.

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Picked up Mantanilla Light Whistle off the Little Bahama Bank at 26 miles, which sounds unbelievable considering the size of the target.

Picked up a contact at 8 miles and after closing on the object it was found to be a buoy which had broken from its mooring.

It is already proved that the ship has gained several days and nights with the aid of radar.

All the various pilots who had been aboard stated that this radar presents one of the best pictures they had ever seen.

While watching the radar scope, the First Mate saw two other ships on a collision course with one another, contacted the two vessels by radiotelephone and directed them to change their course, thereby avoiding a possible accident.

Rather than have the CR-101 removed from my vessel, I would be willing to pay $200 per month out of my salary to keep the equipment aboard.

Made landfalls by radar in the Baltic Sea and from port to port in Finland when not visible to the naked eye

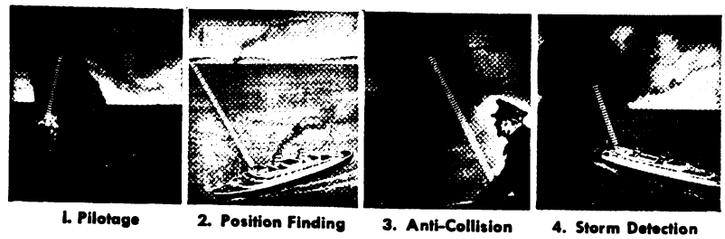
By means of radar we kept the ship on a true course, thereby saving time and oil.

Passed inside between the Shumagin Islands and the mainland, obtained excellent results with radar through this tricky passage.

Going through the English Channel — low visibility — radar used to a large extent to pick up buoys and lights that were not visible more than one mile at the most.

These are just a few of hundreds of reports on the excellent performance of Radiomarine's 3.2cm Radar. They tell of a job well done in helping to maintain faster, safer schedules in all weather conditions at sea, in harbor, in inland waters. Send for complete report, "Eyewitness Accounts of RCA Radar Performance." Write: Radiomarine Corporation of America, 16 First Street, San Francisco, California. Tel: Garfield 0673.

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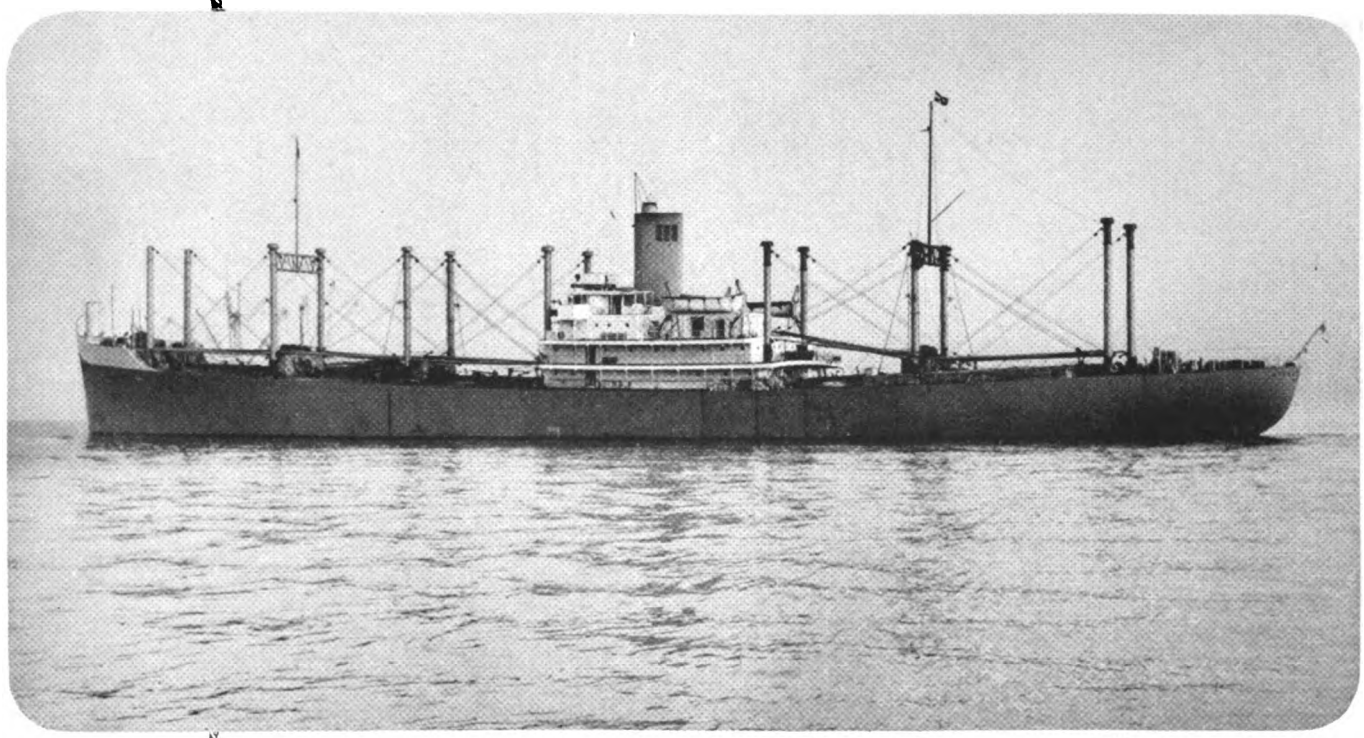
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"Steel Executive"

THE ISTHMIAN FLAG IS

"Flown 'round the World—
Known 'round the World"

● Established in 1910, as the Maple Leaf Line and the New York and South American Line, Isthmian took its present name with the opening of the Panama Canal.

During World War II, more than half of its fleet was lost in operations on both sides of the world. Now, Isthmian can boast a fleet larger than ever before. By steadily adding twenty-four fast C-3's since 1946, the line now operates 45 vessels with a cargo carrying capacity double that of prewar size. Isthmian offers fast cargo-passenger service around the world.

As the "Steel" fleet expands this American flag line to more distant points, Dearborn is providing water treatment formulas and engineering service to protect against feed-water troubles in any waters. Dearborn is proud to serve the "Steel Executive" as well as other such ships of the great Isthmian Line.

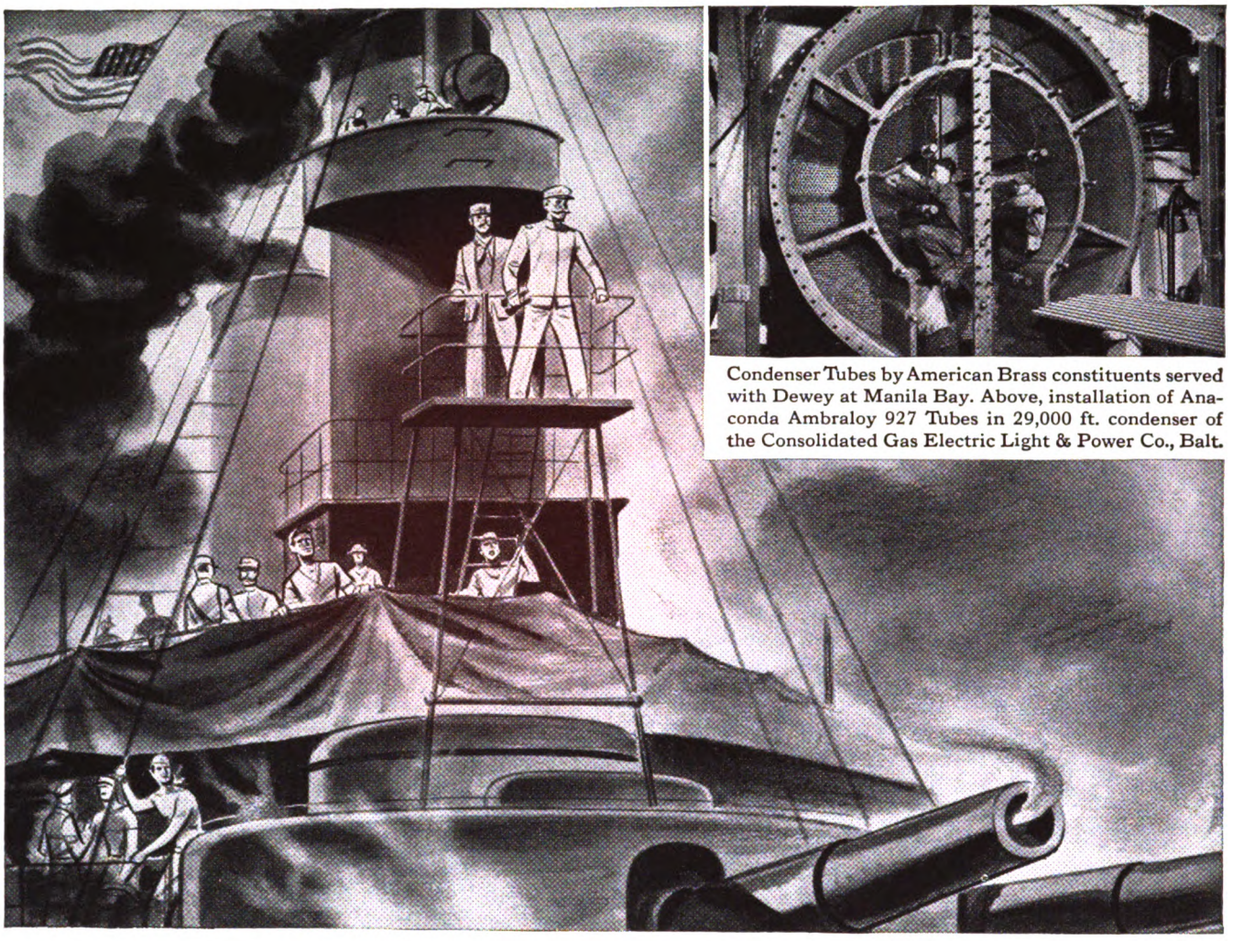
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Condenser Tubes by American Brass constituents served with Dewey at Manila Bay. Above, installation of Anaconda Ambraloy 927 Tubes in 29,000 ft. condenser of the Consolidated Gas Electric Light & Power Co., Balt.

The U.S. History of Condenser Tubes is a Story of AMERICAN BRASS

FOR MORE THAN TWENTY YEARS before the steam turbine brought surface condensers into the electrical generating scene, founding members of The American Brass Company had been furnishing seamless, cold-drawn copper and copper alloy condenser tubes to American naval and merchant ships and to the British Admiralty.

Manufacture of these tubes was first begun by the cast shell method in 1870. Since then, members of The American Brass family have taken the lead in condenser tube development.

In the 90's Benedict Metal provided the first cupro-nickel tubes.

In 1896—importation of the Mannesmann Process for hot rolling tubes.

In the late 90's—the first Admiralty tubes.

In 1909—the cup-drawn process for tubes.

In 1912—the finishing light anneal to eliminate the tendency to lengthwise splitting known as "season cracking."

In 1930—the first use of extrusion presses for condenser tube stock; which, after cold rolling and drawing still produces the most physically perfect tubes.

New 40-page booklet on Condenser Tubes and Tube Sheets, currently produced in eight standard and several special alloys, now available. Write for Publication B-2.

40129

ANACONDA
from mine to consumer

Anaconda

CONDENSER TUBES

THE AMERICAN BRASS COMPANY

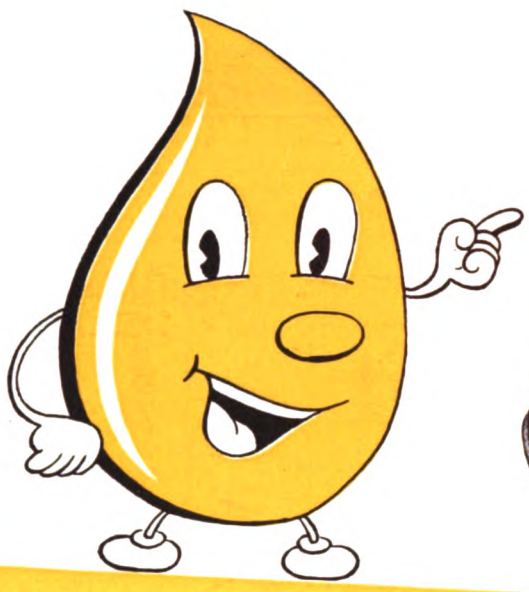
General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

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This oil...





...fights Acid Action

of "On and Off" operation

THE MAJOR CAUSE OF ENGINE WEAR

Unique "X" Safety Factor in Shell X-100 Motor Oil Counteracts Acid Action

It's not friction, as generally believed, that causes the most engine wear.

It's Acid Action — chemical etching of engine parts that take place in the low engine temperatures of "On and Off" operation.

Intermittent use . . . long runs at idling speed . . . frequent stopping and starting — under such conditions, engines seldom warm up to efficient operating temperatures. They run "cold." Hence, combustion may be incomplete and partially burned fuel gases and moisture attack the smoothly polished metal surfaces *chemically*. It's this biting Acid Action that accounts for up to 90% of engine wear!

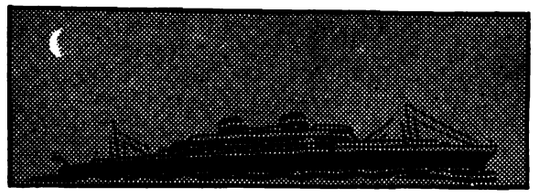
Shell Research worked all out on this problem . . . developed a unique "X" safety factor to combat Acid Action. Now, 2½ million miles of road testing and millions of miles of use by motorists have proved conclusively that with this "X" safety factor Acid Action is effectively counteracted — engine life is prolonged.

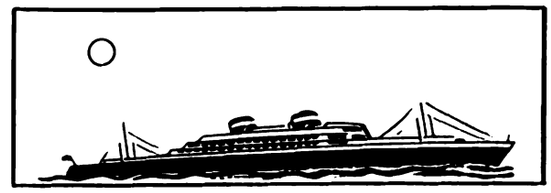
This triumph of Shell Research — another Shell "first" — comes to you only in Shell X-100 Motor Oil. This oil, long famous for its ability to protect your engine under the stresses of sustained high speeds and extreme operating conditions, now gives you this added protection. It is unequalled by any other motor oil, no matter its price.

It's Incomparable!

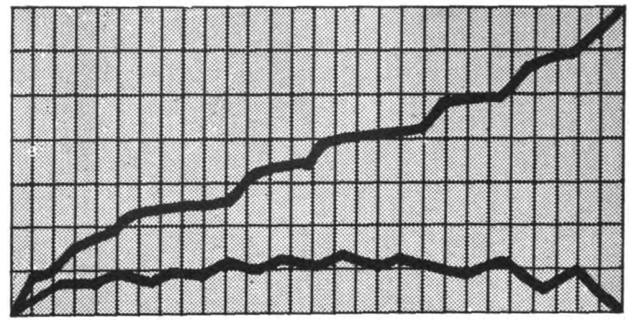
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Yes, You Burn Midnight Oil and Daylight Oil





--BUT HOW?



FUELKLEEN TREATED OIL

UNTREATED OIL

When you burn it doesn't matter. It's HOW!

DO YOU GET the utmost BTU efficiency, night and day, from your fuel oil for steam and diesel power?

Is your oil efficiency reduced by water, or by sludge and foreign matter in dirty bunkers?

Are your rings and nozzles clean; do they STAY THAT WAY?

If you can't answer "yes" to all these questions, you're not getting the utmost efficiency and economy out of your fuel oil.

If you can't answer "yes" to all these questions, you need Fuelkleen.

Really revolutionary Fuelkleen has a chemical action that neutralizes and dissolves dirt, sludge and gum in fuel tanks, lines, heaters and boilers; eliminates water in oil emulsions, protects against pitting and corrosion. That's why it's tops for tank and line cleaning; for keeping repair and maintenance costs to a minimum. A Fuelkleen tank cleaning job can often be done for as little as 5% of manual cleaning cost—and at a tremendous time saving. And Fuelkleen is non-injurious, non-explosive, easily applied.

How about a Fuelkleen trial-test? Write us details —or tell the Sumco service office listed below that's nearest you, what's your toughest cleaning job. If we don't show you results, the job is on us.

144 CENTRE STREET
BROOKLYN 31, N. Y.

Sumco PRODUCTS INC.

178 FREMONT STREET
SAN FRANCISCO 5, CAL.

Manufacturers of **FUELKLEEN • TUBEKLEEN • HEATERKLEEN • AQUAKLEEN • OILKLEEN • SUMCO SUDS**

REPRESENTATIVES: Power Engineering and Supply Co., Seattle 4, Washington; Sumco Products Agency, San Pedro, California; Western Ship Service Co., San Francisco 5, California; Boiler & Engineering Service & Supply Co., Portland 9, Ore.; Galveston Ship Supply Co., Galveston, Texas; Galveston Ship Supply Co., Houston, Texas; Gulf Coast Marine Supply Co., Mobile, Ala.; Marine Industrial Service Company, New Orleans, La.; T. Roddy Lanigan Co., Miami, Florida; Hal F. Sterne Company, Charleston, South Carolina.

FUELKLEEN

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same name on her **bow**



same name on her **boilers**

Oakey L. Alexander Continues Tradition of Dependable B&W Steam

When the original collier "Oakey L. Alexander" was lost at sea, her owners, Pocahontas Steamship Company, replaced her with a converted Victory Ship. Remembering the fine record in fuel economy, cleanliness, compactness and light weight of the B&W Boilers on her predecessor, the new owners again specified B&W steam power for re-boilering their vessel. This "second generation" "Oakey L. Alexander" is now the world's fastest collier.

Reliability and operating economy are an old story with B&W boilers on all kinds of vessels in ocean, lake and river service. For powering new ships or re-boilering existing ones, B&W offers you unequalled knowledge and experience gained from supplying more header type and drum type marine boilers than any other manufacturer.

B&W BABCOCK & WILCOX

M-250

ON THE PACIFIC COAST: C. C. MOORE & CO., 450 MISSION STREET, SAN FRANCISCO

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Serving Middle America
for 50 years

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A half century of Caribbean service underscores today's function of the Great White Fleet. Here are fast, fully-refrigerated cargo and passenger vessels—modern and spotless—fit, willing and able to serve shippers and travellers in Inter-American trade. Competent staffs, afloat and ashore, and modern equipment and facilities are yours to command.

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"Blue Center"
Wire Rope

A FIRST SPECIFICATION IN MARINE SERVICE

WHEN YOU PULL DOWN COSTS these days it's something to brag about. And with Preformed "Blue Center" Wire Rope you can cut costs to the minimum.

"Blue Center" Steel—made only by Roebling—provides shock resisting stamina and toughness. The Preforming process—improved and perfected—simplifies installation, reduces whipping and vibration, improves winding. It is not inclined to twist and kink . . . is easy to handle and install . . . can be cut without seizing. This combination of advantages gives unsurpassed life and serviceability.

Roebling Wire Rope is one of the best-known products in industry today. There's a type and size for every kind of service. Have your Roebling Field Man suggest the *one* rope best adapted to your needs. John A. Roebling's Sons Co. of Calif.—San Francisco—Los Angeles—Seattle—Portland.

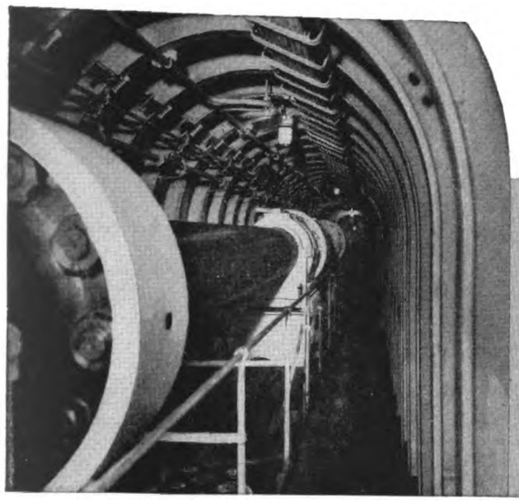
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☆ A CENTURY OF CONFIDENCE ☆

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SHAFT ALLEY Chatter

Pennington Elected VP of Internat'l Shipping Federation

First American to be so honored, Maitland S. Pennington, vice president of Pacific Transport Lines, Inc., San Francisco, has been elected vice president of the International Shipping Federation.

ISF is made up of representatives from approximately 40 maritime nations and concerns itself basically with seafaring labor problems. Its present president is the British shipping magnate, Basil Sanderson, M. C., chairman of Shaw, Savill & Albion Company, Ltd., and director of the Bank of England.

Mr. Pennington has been prominent in national shipping circles for a number of years. He was one of the original organizers of the National Federation of American Shipping, of which he was vice president, until he resigned to become vice president of Pacific Transport Lines, Inc. He is at present a director of the Federation. Locally, he is vice president and director of the Pacific American Steamship Association.

⚓ ⚓ ⚓

A. E. Kihn Succeeds McEachern At Standard of California

Appointment of A. E. Kihn as manager of its marine department is announced by Standard Oil Company of California. Kihn succeeds J. H. McEachern, marine department manager since 1935, who has taken over special duties under the direction of President T. S. Petersen.

Kihn has been identified with Pacific Coast shipping for many years, and is the third in his family's line to become shipping executives here since 1850.

His entire career with Standard has been in the marine department, where he started as a file clerk in 1915. During World War I, Kihn was placed in charge of marine personnel. Further advancements brought him to the position of assistant manager in 1941, from which he moved to his present position.

McEachern joined Standard in 1913 after a decade as a marine engineer in coastal and offshore shipping. As manager of the company's marine department he instituted changes in the tanker fleet which resulted in greater comforts for men at sea, and some of the finest crew accommodations afloat.

⚓ ⚓ ⚓

Chas. Crouch Heads New Department at APL

Formation of a services and supply department to consolidate American President Lines purchasing, catering and other services formerly handled by the steward's department was announced by George Killion, company President. The new department will be under the supervision of Charles Crouch as director of services and supply.

The department will purchase all consumable supplies, establish purchasing procedures for other departments, and endeavor to improve present standards of service through increased efficiency according to Mr. Killion.

Mr. Crouch was selected to direct the organization of the services and supply department because of his long experience in organizational and merchandising capacities, the APL President stated.

All phases of the company's purchasing and catering activities will be studied by Mr. Crouch. Purchases of food, deck and engine stores, stationery and other items will be considered for both quality and quantity. Procedures for the elimination of waste will be established, and the use of all materials requisitioned will be studied.

Mr. Crouch joined American President Lines a year ago as special assistant to Mr. Killion. He has conducted several surveys of various phases of company operations, including a business survey of the Orient.

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Frederick E. Lykes Receives Honorary Degree

The University of Florida has conferred the honorary degree of Doctor of Laws upon Frederick E. Lykes, director and one of the founders of the Lykes Bros. Steamship Co., Inc. The honor was awarded to Mr. Lykes during commencement exercises recently in Gainsville, Florida. Mr. Lykes was born at Springhill, near Brooksville, Florida, on July 2, 1877, and was graduated from the East Florida Seminary in 1894. The Seminary was later merged into the University of Florida and he is, therefore, an alumnus of both.

The honorary degree was conferred on Mr. Lykes by the University of Florida's President J. Hillis Miller. The citation accompanying the diploma read as follows: "Frederick Eugene Lykes, native son of this great commonwealth, you have not only served your State well, but have helped to make America great. You are counted among those who have pushed back the frontiers and built within this nation a prosperous and ever-expanding economy."



A. E. KIHN . . . new manager of the marine department of Standard Oil Company of California.

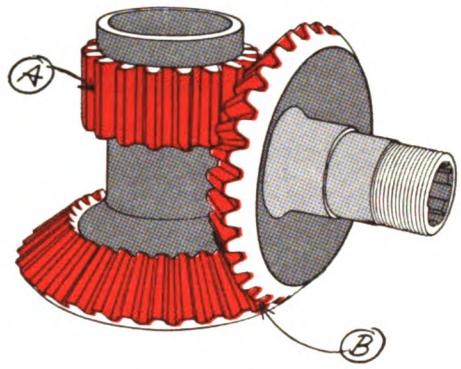


CHARLES CROUCH, American President Lines' new Director of Services and Supply.

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Case 1104—Keeping Lubricant on Open Drive Gears



OPEN DRIVE GEARS

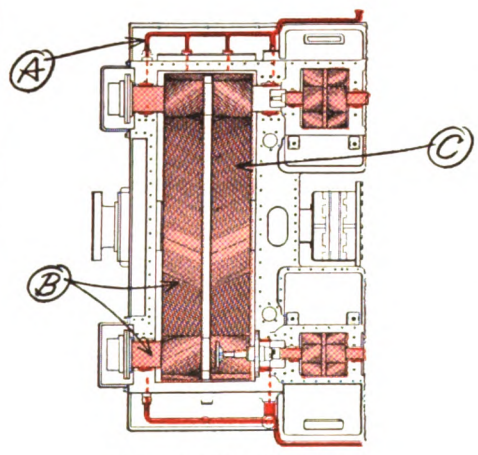
Calol Gear Lubricant did not throw off open drive gears operating at high speeds. Maintaining a constant heavy lubricating film on gear teeth, it reduced noise and wear from the shock loads. Also recommended for the lubrication of wire rope and cable.

A. Extremely adhesive — sticks tenaciously to gear- and pinion-tooth surfaces . . . stays between wires and in hemp centers of wire ropes.

B. Resists pressure and provides a tough, cushioning film — prevents metal-to-metal contact on gear teeth and reduces friction on wire rope strands.

Calol Gear Lubricant is made from selected crudes and contains a non-inflammable solvent which lightens its consistency. This solvent, which evaporates quickly after Calol Gear Lubricant is applied, permits the lubricant to be spread on gears easily and promotes penetration of wire rope and cables.

Case 1148—Eliminating Turbine Oil Deterioration



TURBINE REDUCTION GEARS

A laboratory analysis of a sample of Calol OC Turbine Oil taken from a continuously operating, heavily loaded turbine after four years of use showed the oil had not increased in acidity or deteriorated in any way. Lines, sumps and governor control were clean and bearings, gears and other parts in good condition. Calol OC Turbine Oil comes in 4 grades: 9, 11, 15, 19.

A. Contains a highly effective oxidation inhibitor — prevents the formation of sludge, gum, lacquer and deposits in lines and on parts.

B. Corrosion inhibitor stops rusting — in official tests, Calol OC Turbine Oil in both fresh and salt water kept steel strips from rusting while they were in the water-oil mixtures for 48 hours.

C. Has excellent metal-wetting ability and high film strength — withstands the heaviest gear and bearing loads and reduces wear.

Trademark Reg. U. S. Pat. Office

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush St., San Francisco 20, California.

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FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

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SHAFT ALLEY (continued) Chatter

Bethlehem Starts Building New American Export Ship

Construction of the ss CONSTITUTION, one of the nation's largest and fastest passenger vessels, started at Bethlehem Steel Company's Quincy, Massachusetts shipyard for American Export Lines.

The CONSTITUTION will accommodate about 1,000 passengers in three classes. Designed speed is 25 knots. Estimated gross tonnage is in excess of 20,000 tons and displacement about 30,000 tons.

The CONSTITUTION is the second of two similar large express liners to be ordered by American Export Lines for their New York-Italy express service. The first was the ss INDEPENDENCE, keel for which was laid at Quincy, March 29. Together they will cost $46,830,000. They will be built under the Merchant Marine Act of 1936. Expected delivery date is the fall of 1950.

The vessels are 683 ft. in length with molded breadth of 89 ft. Power will be furnished by twin geared turbines of Bethlehem design that will develop 55,000 horsepower. Steaming range is 22,000 miles.

Numerous National Defense features are embodied in the design to make the CONSTITUTION and the INDEPENDENCE suitable as troop carriers in time of emergency. Estimates indicate a troop capacity of 5,000 men and their equipment.

According to John E. Slater, executive vice president of American Export Lines, nearly $1,000,000 has been spent in development work on this new type vessel to assure success when they are placed in trans-Atlantic operation. This sum has been spent in building and testing model rooms built to full scale and completely furnished, in testing various types of equipment, in model basin and wind tunnel tests, and in proving out other design features.

The CONSTITUTION and INDEPENDENCE have hulls with clean sweeping lines. The decks of the superstructures are stepped back at each level. Stem masts and funnels are smartly raked.

The entire promenade deck is devoted to public rooms, including a circular observation lounge forward. A completely equipped theatre, two children's play rooms, gymnasium and electric baths are among the wealth of modern comfort.

The outdoor swimming pool and the recreation area are of distinctive design never before used on an ocean liner. Considerable space has been devoted to this play area because of the extensive use passengers can make of outdoor facilities on crossings via the Southern Trans-Atlantic route which the new express liners will follow between New York and the Mediterranean.

Bethlehem Steel Company, in collaboration with American Export Lines' technicians, designed the hull and technical details of the CONSTITUTION and sister ship. Henry Dreyfuss designed the interiors.

Like the new "4 Ace" passenger vessels placed in New York-Mediterranean service last fall by the company, the new CONSTITUTION and INDEPENDENCE will be completely air conditioned. Every stateroom and public room, all crew quarters and all crew working spaces on the eight decks will thus be protected from the vagaries of temperature regardless of season or latitude.

⚓ ⚓ ⚓

Dewey Paine With American Mail Line at Portland

Dewey Paine, formerly with Coastwise Lines and United States Lines at San Francisco, has been named assistant to Pete Loftus, port steward and purchasing agent for American Mail Line at Portland, Oregon.

⚓ ⚓ ⚓

Delta Line Announces Personnel Changes

Theodore Brent, president of Mississippi Shipping Company, Inc., announced the following personnel changes in the company:

H. X. Kelly is elected executive vice president; Charles Harrington, formerly vice president of Kerr Steamship Co. at New Orleans, has been appointed assistant freight traffic manager; and Captain John W. Clark has been appointed assistant to the president.

⚓ ⚓ ⚓



HOWARD C. MOORE . . . newly appointed Manager of the Construction and Repair Division of Moran Towing & Transportation Co., Inc. Formerly Superintendent of Engineering, Maintenance and Construction, Mr. Moore has been with the company since 1928.

Everett Pacific Appoints Eastern Representative

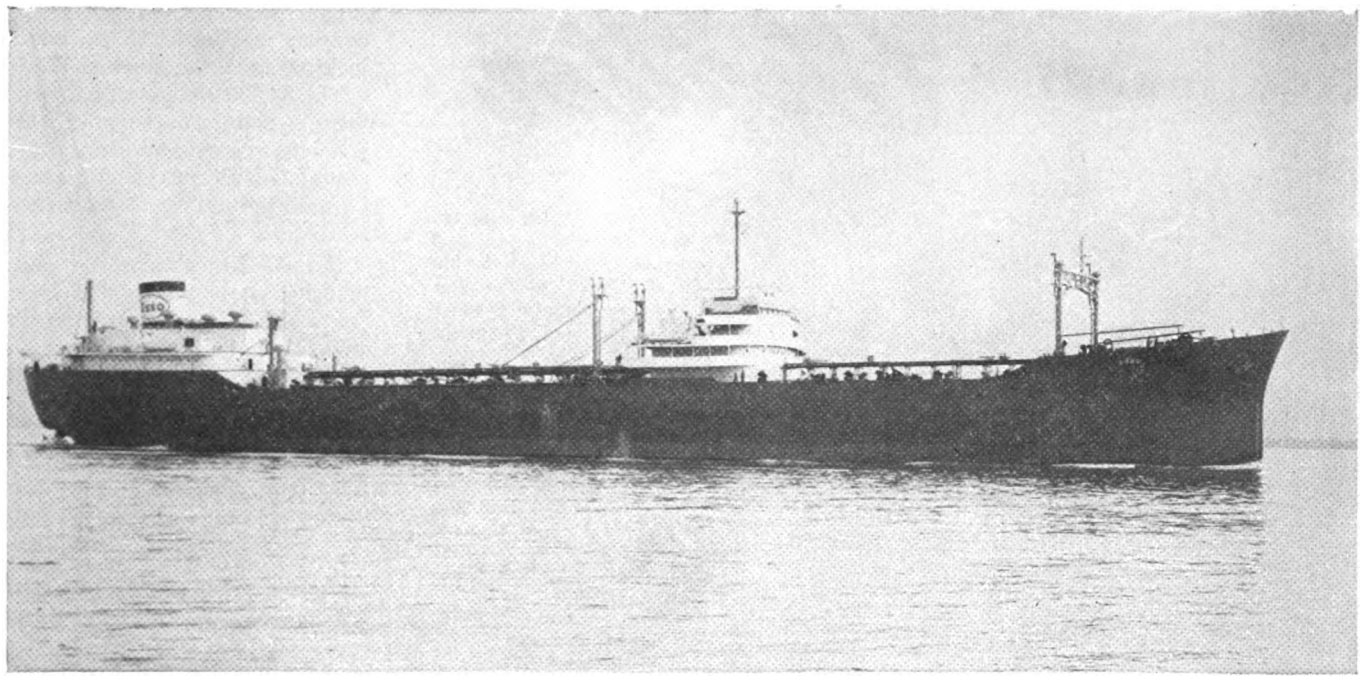
The Everett Pacific Shipbuilding and Dry Dock Company, Everett, Washington, has appointed Charles Petzold & Company, naval architects and marine engineers of 11 Broadway, New York, as Eastern representatives. Mr. Petzold, will handle contact work, sales and coordination between the Everett yard, shipowners and operators on the Eastern and Gulf Coasts, in addition to serving as the representative for Everett Pacific in relations with government agencies in Washington, D. C. Mr. Petzold was formerly associated with Gibbs & Cox, Inc.

The Everett Pacific yard, located on Puget Sound, states it is capable of dry docking vessels up to 10,500 tons, and with its deep-water piers and complete facilities is able to handle ship repair and conversion of every kind.

THIRD ANNUAL PICNIC of the Port Stewards Association of the Pacific Coast held at the Tourist Club in the Oakland hills in June. Many San Francisco steamship men and their families are in this group picture. In the annual picnic baseball game, the team composed of port stewards located north of the Ferry Building on the San Francisco waterfront defeated the nine made up of those from south of the Ferry—or maybe it was vice versa!



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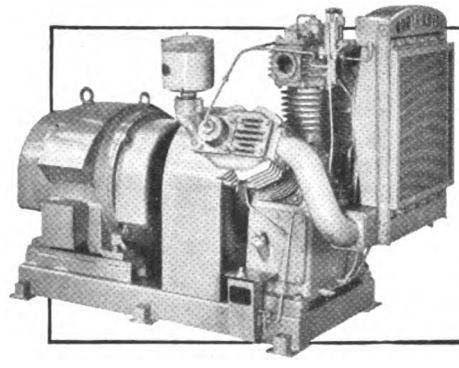


AIR FOR ALL PURPOSES

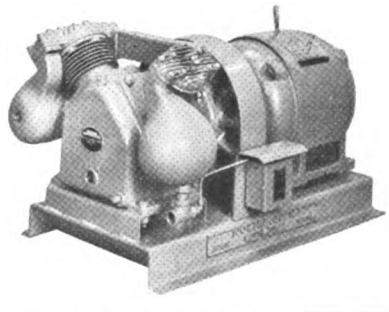
Worthington Air Compressors on the New Super-Tankers

The new super-tankers being built by both Sun and Newport News are equipped with Worthington Soot Blowers & Ship's Service Air Compressors, and Worthington Combustion Control Air Compressors. Especially designed for shipboard service, these completely automatic compressors are compact and rugged, yet as light in weight as is consistent with best engineering practice.

Worthington's many years of Marine experience have been built into these vital auxiliaries which give daily proof that *there's more worth in Worthington.* Consult with Worthington's Marine engineers to solve your shipboard Air Compressor problems by contacting *Worthington Pump and Machinery Corporation, Marine Division, Harrison, N. J.*



Worthington Soot Blower & Ship's Service Air Compressor Model V3A2 . . . Size: $\frac{6}{6}$/5 x 5 in. 110 cfm actual . . . 125# . . . 30 hp . . . 870 rpm.



Worthington Combustion Control Air Compressor Model TB . . . Size: $3\frac{7}{8}$/$2\frac{5}{16}$ x $2\frac{1}{8}$ in. 20 cfm actual . . . 125# . . . 7½ hp . . . 1750 rpm.

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WORLD'S BROADEST LINE OF ENGINE ROOM AUXILIARIES

Compressors • Diesel Engines • Turbines & Turbo-Generator Sets
Centrifugal, Steam, Power, Vertical Turbine & Rotary Pumps
Air Conditioning Equipment • Condensers, Ejectors & Deaerating
Water Heaters • Liquid Meters

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SHAFT ALLEY (continued) Chatter



JACK FAVELL, left and his wife, admiring a clock and barometer set given by his many friends in the San Francisco marine trades when he resigned recently as assistant superintending engineer of the Army Transport Corps at Fort Mason. BILL GRAHAM, right, marine manager for Giampolini & Co., San Francisco painting contractors, arranged for the farewell gift, which is shown on the table, topped by a floral piece and a ribbon: "Success to Jack."

Bernard R. Mullady Appointed Asst. to Chairman of USMC

Major General Philip B. Fleming, new chairman of the U. S. Maritime Commission, has announced the appointment of Bernard R. Mullady as assistant to the chairman. When General Fleming was Federal Works Administrator, Mullady was director of information of FWA.

The new appointee was a New York newspaperman for a dozen years before joining the press office of the Wage and Hour Division, U. S. Department of Labor, when it was set up in 1938. A year later General Fleming, then a colonel, was named Wage-Hour Administrator. Mullady became director of information and compliance of the Wage and Hour Division, then Assistant Information Director of the Labor Department before transferring to the Federal Works Agency in 1947. He was press officer of the U. S. Delegations to the International Labor Conferences at Philadelphia in 1944 and at Montreal in 1946. In 1947 he was lent to the ILO to handle press relations at the Geneva conference.

BERNARD R. MULLADY . . . Assistant to the Chairman of the United States Maritime Commission.



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Alcoa Announces New Passenger Manager

Alcoa Steamship Company, Inc. announced that effective July 1, 1949, Mr. T. L. Williamson has been appointed Passenger Traffic Manager. Mr. Ray Hering will remain in New Orleans as passenger manager, Southern Division.

Mr. Williamson will make his headquarters in the head office of the company in New York, in charge of all passenger traffic. He joined Alcoa in 1941 as assistant passenger traffic manager, after many years in the passenger organization of Cunard-White Star, seeing service in Europe and Cuba. During World War II he was temporarily with the Australian War Surplus Procurement Office. In June, 1949, he was appointed passenger traffic manager, Southern division, for Alcoa with office in New Orleans.

Mr. Hering joined Alcoa in New York in 1941 and was transferred to New Orleans as general passenger agent in 1948. Prior to joining Alcoa he was employed as passenger agent by Delta and Colombian Lines.

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Farrell Lines' Ships Sail on Maiden Voyages to Africa

The new Farrell Lines passenger ship, the AFRICAN ENTERPRISE, sailed on her maiden voyage from New York to the Union of South Africa on July 30. Captain George M. Wauchope, Executive vice president of the line, announced that her sister ship, the AFRICAN ENDEAVOR, is scheduled for her maiden voyage on August 20.

These 14,247 displacement tons ships, accommodating 82 passengers each, all in first class, will reintroduce luxury passenger service over the route from this country to South Africa, which has been lacking since the start of World War II.

The $4,400,000 job of converting the two vessels from troop transports to modern spacious passenger ships is now being completed at the Chickasaw yard of the Gulf Shipbuilding Corporation of Mobile, Alabama.

Farrell Lines acquired the sisterships of 8,000 gross tonnage in December 1948 from the U. S. Maritime Commission, which operated them during the war as the J. W. McANDREW and the GEORGE F. ELLIOTT. The vessels were built in 1940 for Delta Line by the Bethlehem Shipbuilding Company, Sparrows Point, Maryland, and went into immediate war service.

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Raymond Shiner Appointed LA Manager for Grace

Raymond A. Shiner has been transferred from the Washington, D. C. office of the Grace Line and W. R. Grace & Co. to Los Angeles to succeed William A. S. Amant as manager there for these companies.

Mr. St. Amant goes to the New York offices of the firms. In Washington, Mr. Shiner is succeeded by E. Russell Lutz, formerly vice president of the American President Lines.

Mr. Shiner was named the Grace Line's passenger agent in San Francisco in 1934 and, in 1935, was transferred to the New York office as assistant passenger traffic manager.

Shortly after the outbreak of the war, he was commissioned in the United States Army and served in the South Pacific and in Japan. He has been in charge at Washington for Grace since he left the Army.

RAYMOND A. SHINER . . . Newly-appointed manager in Los Angeles of the Grace Line and W. R. Grace Co.



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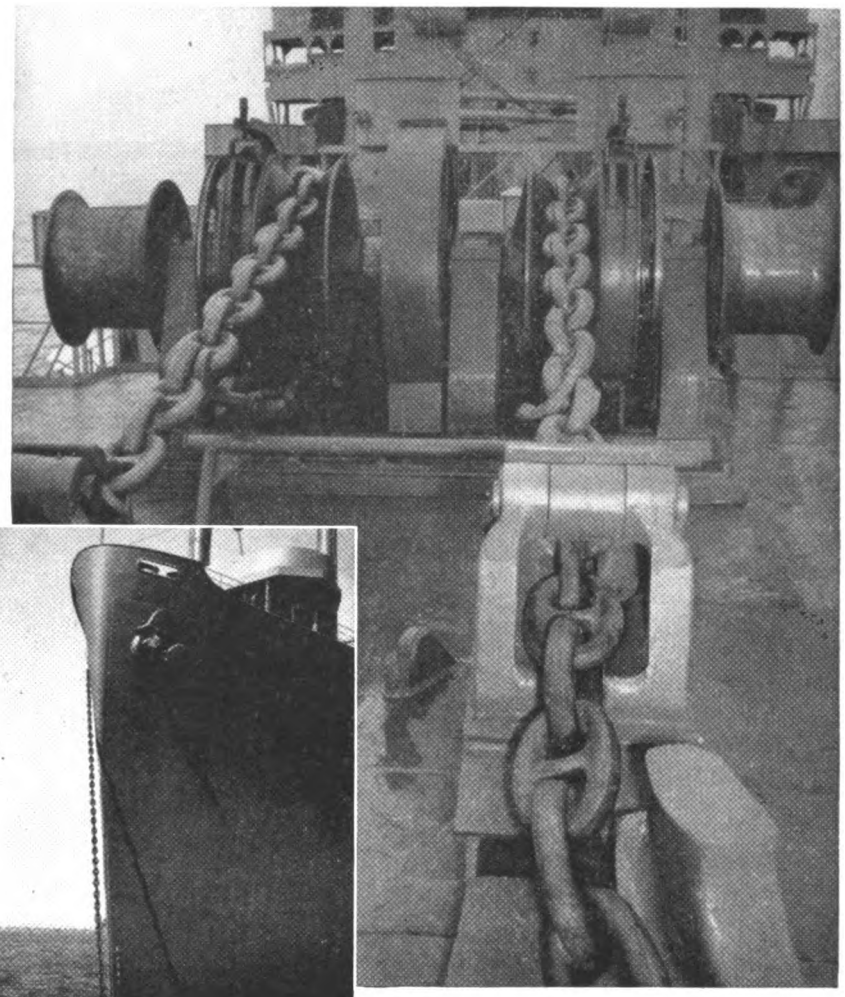
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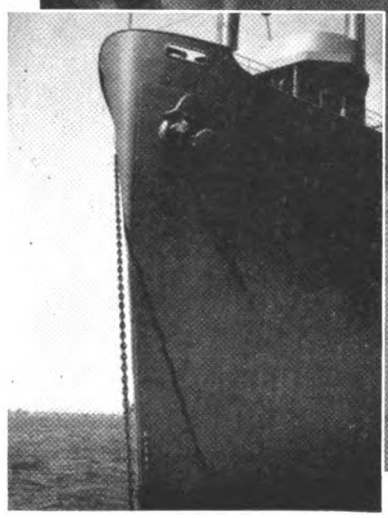
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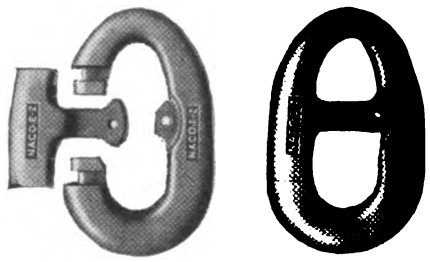
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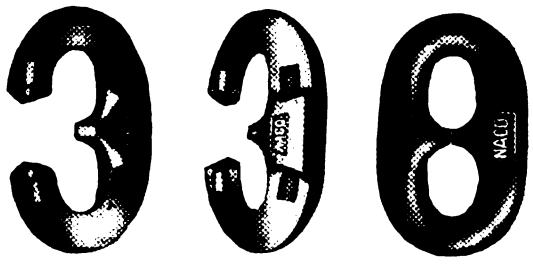
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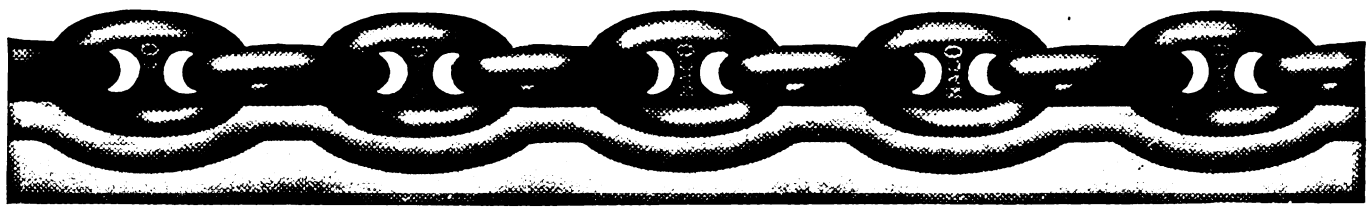
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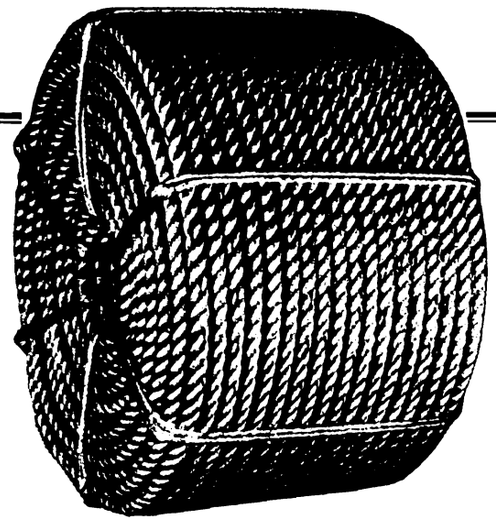
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the LOG
OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

AUGUST, 1949 Vol. 44, No. 9

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Pacific Maritime Association Completes Organization

The reorganization has been completed whereby the Waterfront Employers Association of the Pacific Coast, Waterfront Employers Association of California and the Pacific American Shipowners Association were consolidated into the new group, the Pacific Maritime Association.

O. W. Pearson, formerly vice president of the Marine Terminals Corporation was elected president of the new association.

Elected vice president and general manager of PMA was Henry W. Clark, who held the same post with the Waterfront Employers Association of the Pacific Coast.

J. B. Bryan, formerly PASA president, was elected vice president in charge of administration of crew contracts. Also elected vice president of the new group was E. N. W. Hunter, assistant to the president of Pope & Talbot, Inc.

Kenneth F. Saysette and James A. Robertson were elected to the posts of treasurer and secretary, respectively, of the new group. Both held the same posts with WEA.

First in the list of purposes of PMA, set out in the proposed articles, will be:

"To encourage the establishment and maintenance of fair and reasonable wages and working conditions for seamen upon American flag vessels and for longshore work . . . and, by the establishment and maintenance of harmonious and peaceful industrial relations between employer and employee, to promote dependable and efficient steamship service in the public interest."

Functions of PMA will include the negotiation and administration of the seven major maritime union contracts formerly handled separately by WEA and PASA.

Principal office will be at 16 California Street, San Francisco. Area offices will be maintained in Seattle, Portland and Long Beach.

Make-up of the 21-man Board of Directors was carefully considered to accomplish full representation of the various segments of the industry, including passenger lines, intercoastal, coastwise, Alaskan operators, off-shore lines, foreign lines, stevedores, terminal operators and area groups.

A streamlining feature to facilitate quicker handling of the group's affairs, is the establishment of executive committees. Five such committees, one for the coast and one for each major port area will, under PMA by-laws, "exercise such power and authority of the Board of Directors in the management . . . of the corporation as the Board of Directors shall determine . . ."

Area executive committees will control local policy in the the Seattle-Puget Sound, Portland-Columbia River, San Francisco Bay Area and Los Angeles-Long Beach area. Area executive committee chairmen will hold seats on PMA's Board of Directors.

The new operational methods will be continued and emphasized under PMA. Actual employers will continue to handle the group's labor relations, by membership on, and direct participation in, port labor relations committees. Also, port area arbitrators will pass final judgment on all disputes not involving a basic contract interpretation.

The organization, budget and finance committee was assigned the reorganization task on January 24, 1949. Active on the committee have been E. N. W. Hunter, Chairman; Hubert Brown, K. H. Finnesey, Boyce Luckett, M. S. Pennington, Randolph Sevier and Donald Watson, all executives with prominent steamship lines.

The Waterfront Employers Association of the Pacific Coast was incorporated in 1937, although local associations have existed in other ports as early as 1920. The Pacific American Shipowners Association was incorporated in 1936. Membership of the new group, taking in WEA and PASA members will be about 150.

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APL Refunds Over Six Million Dollars to USMC

American President Lines has presented the United States Maritime Commission a check in the amount of $6,102,000.00, as a refund on operating differential subsidy received by American President Lines during the period October 1, 1938 to March 31, 1942, President George Killion announced.

In a covering letter addressed to Major General Philip B. Fleming, Chairman of the Maritime Commission, Mr. Killion said in part:

"The estimated refund of $6,780,000.00, of which this check constitutes all but $678,000.00 is approximately 78½ per cent of the amount of subsidy paid to the company from October 1, 1938 to March 31, 1942. In addition to this refund of operating subsidy, I should like to call your attention to the fact that this company voluntarily submitted to the United States Maritime Commission the sum of $111,-083.26 representing profit on certain war business during the period under consideration.

"The far-sighted policy of the Maritime Commission in 1938 in granting this subsidy agreement permitted this company to construct and operate six vessels which were a substantial addition to our national defense when we became involved in war. The wisdom of the commission in approving this agreement over ten years ago has been borne out by the fact that over three-fourths of the subsidy is being returned to the federal taxpayer and the purposed national defense as contemplated in the Merchant Marine Act of 1936 was fulfilled."

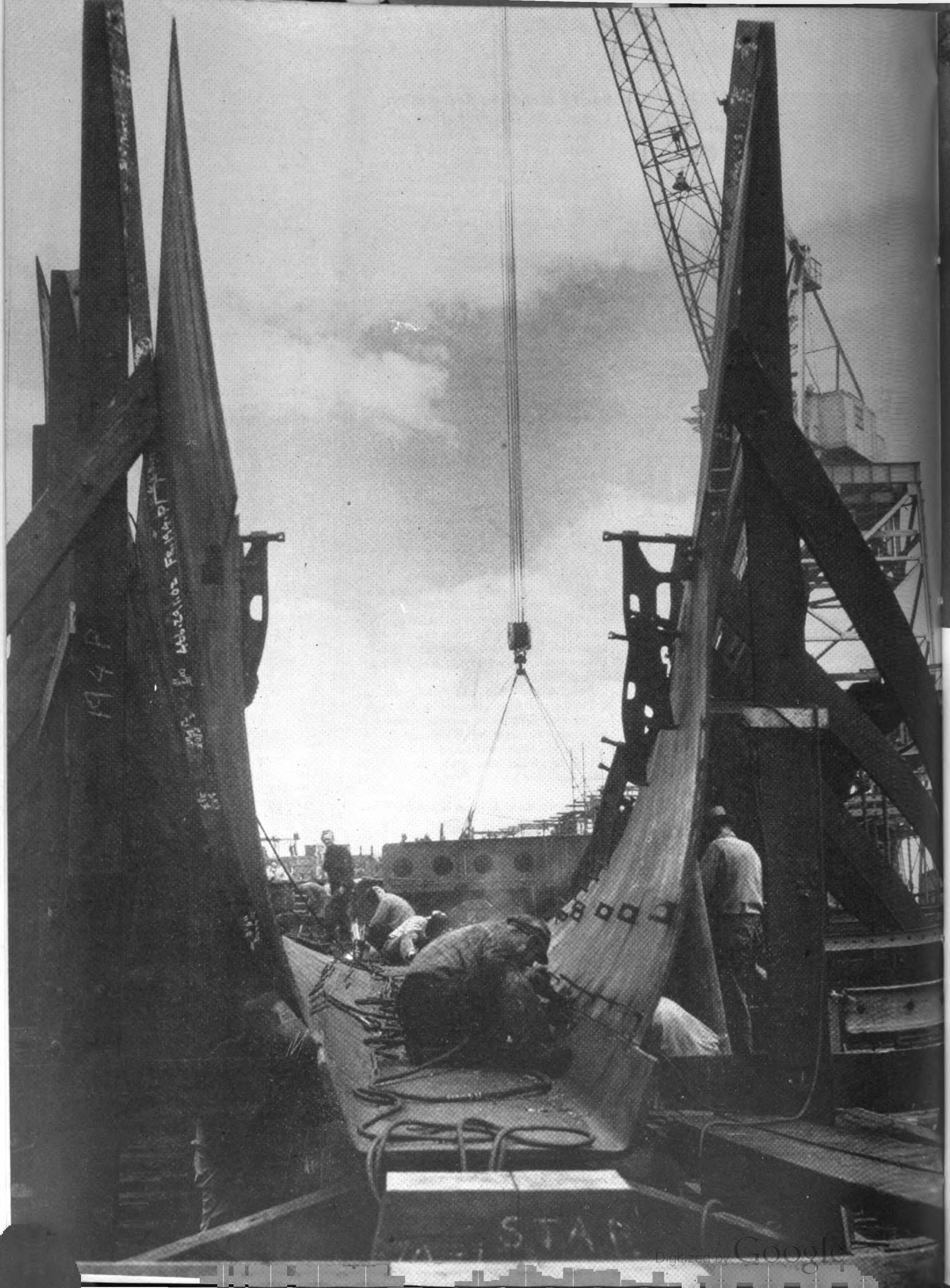
In discussing the general subsidy situation, Mr. Killion said:

"One reads and hears a great deal of comment about subsidies paid to steamship operators, and there are two facts on this subject which appear significant:

"(1) that shipping subsidies are virtually microscopic when compared to similar federal grants to business and agriculture; and,

(Continued on Page 40)

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STAR



Airview of the New York Shipbuilding Corporation facilities at Camden, New Jersey.

NEW YORK SHIP

FIFTY YEARS OF ACHIEVEMENT

A group of men caused a revolution in shipbuilding and established a shipbuilding company with an enviable record.

Fifty years ago, in 1899 to be exact, a small group of men gathered around a board-table and reached a decision which has left a definite mark in the maritime history of the United States. Like other small groups of men meeting in rooms throughout the years since, they were looked upon as rash exponents of unrealistic dreams, for the plans they were making were fifty years advanced. They were planning what is generally thought of as a development of World War II, which did not occur until nearly half-a-century later.

SS PRESIDENT ADAMS, one of the three new superliners for American President Lines, begins to take shape as workmen weld the bow section.

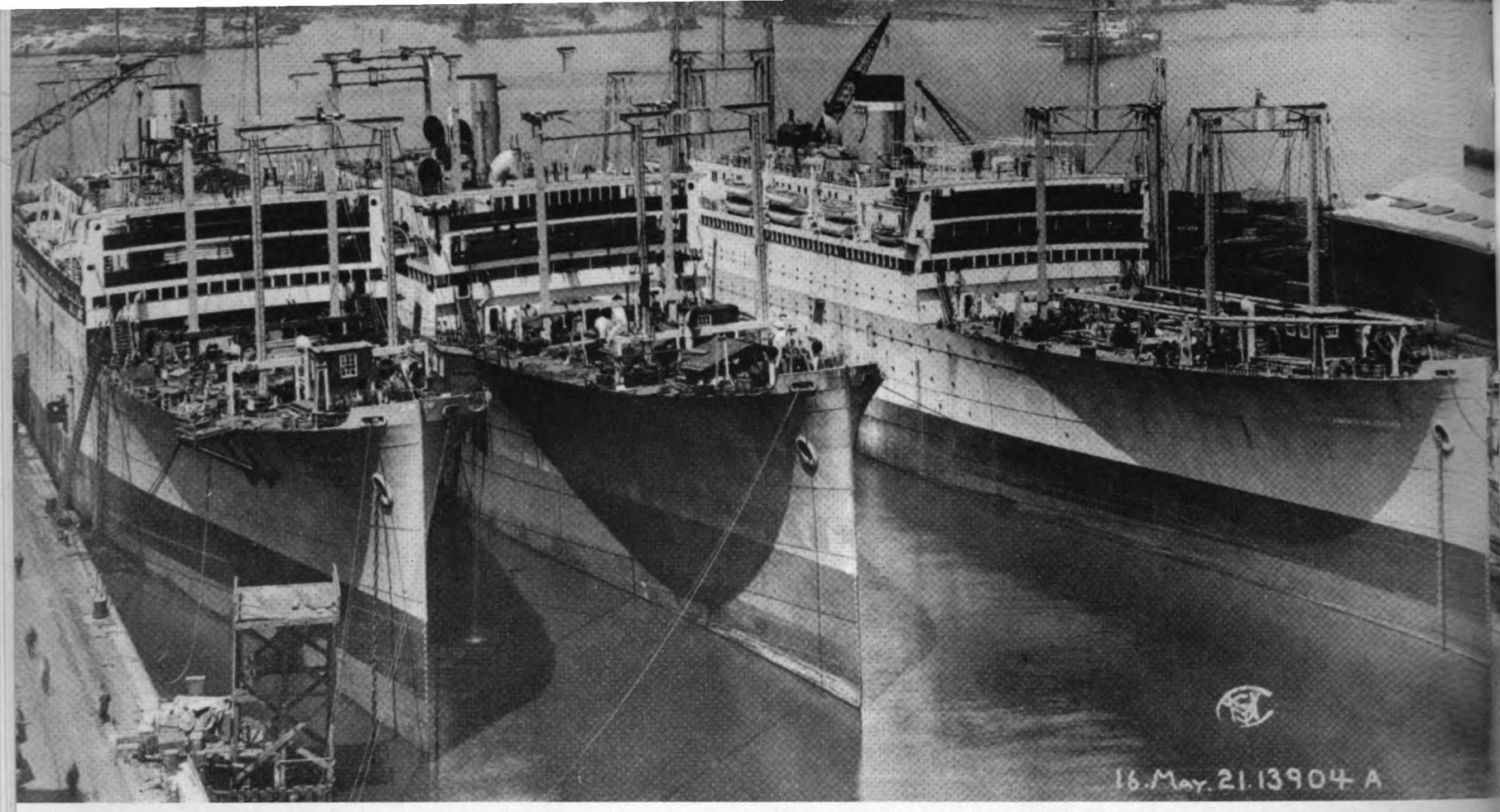
Adverse criticism did not dissuade these men. They were going to build a shipyard. The first step, formation of a company, was quickly taken care of. But the search for a suitable site was a decidedly more difficult task, for the shipyard they were planning then was, according to their visions, going to be producing ships a hundred years later. Although when they formed their company they assumed they would find suitable property in New York harbor, nothing offered fit their ambitious plans. Scanning the coastline from New York to Virginia they finally uncovered an insignificant farmhouse with pleasant fields skirting the banks of the Delaware. Here, next door to the city where another group of visionary men gave birth to their country, they decided to place their mark in history. At Camden, New Jersey, they broke ground for the New York Shipbuilding Corporation.

When Henry G. Morse, first president and guiding genius behind the infant organization, sat down to draw up the plans for the new shipyard, our ports were still dominated by tall masts and spars rising from wooden ships. Some die-hards still scoffed at the smoke-blackened hulls which belched forth their grime as they steamed into the harbor. But Henry Morse was convinced that the steel-hulled vessels then plying the seas were merely crude forerunners of the giant liners to be built. And so when he designed his yard, he designed it to build such inconceivable ships.

A Revolution in Methods

In 1899 production lines were not an integral part of our industrial system. Custom built products still dominated the manufacturing methods of the country. The system which was to make this coun-

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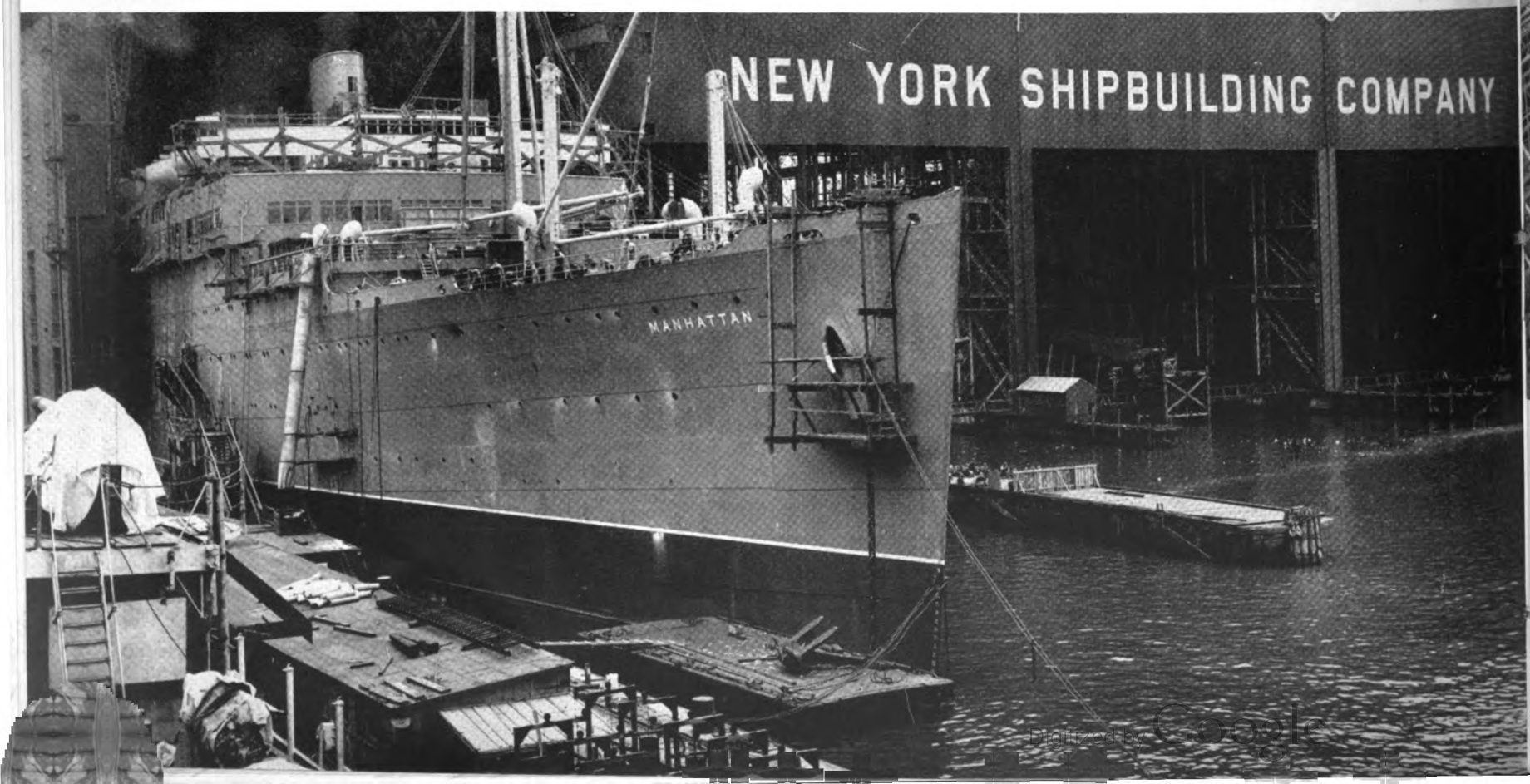
SOMETHING OLD . . . three ships destined to become APL liners under construction at New York Ship on May 16, 1921.

try the mightiest in the history of the world was just beginning to emerge. With foresight, which we can only appreciate through the advantages of aftersight, Henry Morse planned a shipyard which revolutionized shipbuilding methods, and which today remains basically of the same design. Shipyards built during the Second World War, fifty years later, are no more efficiently designed, although they had a half-century of progress upon which to base their calculations.

Today, if one could hover over the New York Shipbuilding yard in a helicopter, and trace the flow of a piece of steel from the time it arrived until it went into its final place aboard ship, he would be amazed at the minimum amount of waste motion, even though the yard has been enlarged several times.

When the yard was completed in 1900, there were five building ways and an outfitting basin, as well as the fabricating shops, under cover. Steel was received at one end of the chain of buildings and moved toward the ways. From a second-floor mold loft, which was such a revolutionary innovation in shipbuilding practice that others frankly predicted it would not work, the templates met the raw steel

LARGEST MERCHANTMEN ever built at Camden were the MANHATTAN and the WASHINGTON. Here the MANHATTAN is being outfitted in the yard's covered outfitting basin.



and moved together into the fabricating shop where the steel structures were to be made.

Because a complete overhead-crane system, with a capacity of 100 tons, had been incorporated into the design of the yard, prefabrication of relatively large sections was possible. The overhead crane system made it possible to lift large sections and move them to the ways. Here the overhead bridge cranes picked them up and moved them into position for incorporation into the vessel under construction. Prefabrication and continuous routing of materials is, of course, standard practice today. But fifty years ago it was revolutionary.

The Old and the New for APL

When American President Lines awarded the contracts for its three new round-the-world superliners to the New York Shipbuilding Corporation, it was dealing with a company with which it had had a great deal of experience, a company which had built ships for them which served in two World Wars and the long intervening period between. When World War I came to an end, New York Ship had sixteen unfinished transports on the ways. Ten of these uncompleted ships were converted into passenger liners for the American President Lines.



SOMETHING NEW . . . three new APL round-the-world superliners now under construction at the Camden yard are just beginning to take shape. The three new ships will be named PRESIDENT HAYES (left), PRESIDENT JACKSON (center), and PRESIDENT ADAMS (right).

The PRESIDENT HAYES, the name of one of the new superliners now under construction, will be the second ship of American President Lines' to bear this name. The first one was also built by New York Ship as the CREOLE STATE (see cut) and renamed when APL took it over. Some of the other APL liners built at New York Ship are the PRESIDENT JEFFERSON, built as the WENATCHEE; the PRESIDENT HARRISON, built as the WOLVERINE STATE; and the PRESIDENT LINCOLN, built as the HOOSIER STATE.

Tankers Then and Now

The officials of New York Shipbuilding Corporation can easily be forgiven for a little reminiscing when they received the contracts from Philadelphia Tankers Inc. for three of the largest tankers now under construction. For one can hardly help comparing these 660-foot, 30,000 DWT tankers with the first ship ever built by the yard, the 310-foot tanker F. M. GUFFEY, which saw a total of twenty-five years service under the American flag and another ten years under the Italian banner.

But the yard is not glorying in its traditions and records to the extent it will be detrimental to its present achievements, for it is still pioneering. The new ten million-gallon tankers now under construction will have a service speed of 17 knots with double reduction geared turbines developing 18,000 s.h.p., and boilers having a steam pressure of 650 p.s.i. and a temperature of 1020° F. at the superheater outlet. The cargo will be handled by three 500 h.p. motor-driven pumps with a combined capacity of 14,000 gallons per minute.

The steady progress made in the development of tankers can be found in the records of New York Shipbuilding. The F. M. GUFFEY, their first tanker, had a capacity of 22,650 barrels. The GULFSTREAM, built in 1914, carried 55,400 barrels. The NORA in 1921 increased this to 98,000 bbls. while the SOCONY VACUUM had a capacity of 126,750 bbls. And the three Philadelphia Tankers Inc. ships now under construction each have a capacity of 257,000 barrels.

Familiar Ships From Camden

The list of familiar and famous merchant ships built at the Camden, New Jersey site, is long and impressive. The largest passenger liners built by the yard are the WASHINGTON and MANHATTAN which for many years kept the American flag in competition with the foreign passenger ships on the North Atlantic.

Contracts 5, 6, 7, and 8 received by the Camden yard were for four large combination passenger-cargo ships, well remembered as the 16,000-ton liners MONGOLIA and MANCHURIA, which like most of the company's ships, saw service in both wars. The MANCHURIA, now the SANTA CRUZ, is still in profitable operation after forty-five years of continuous service.

In 1907 the GOVERNOR, PRESIDENT,

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T. H. BOSSERT



JOHN F. METTEN



D. A. WILLIAMS

and CONGRESS were built for Pacific Coast operation, and the SUWANEE and SOMERSET were built for East Coast service. In the early 1920's the yard built the MUNARGO and the CARABOBO, the latter now in Philippine inter-island trade as the MAYON.

With the first beginnings in a revival of the merchant fleet during the thirties New York Ship built the Grace Liner SANTA CLARA, and the famous American Export Liners, the "Four Aces," EXCALIBUR, EXOCHORDA, EXETER, and EXCAMBION.

The Navy Takes a Chance

The fourteenth contract received by the New York Shipbuilding Corporation launched the company on a career which has perhaps made it even more famous than the merchant ships it has built, for it was then that the Navy, in face of considerable criticism, awarded the infant yard a contract for the cruiser WASHINGTON. Many openly voiced the doubt that New York Ship had the ability and know-how to perform such a complicated construction job. But, accepting the challenge, the yard left no room for doubt when it completed the contract successfully and delivered the vessel on July 30, 1906, ten days ahead of schedule.

Thus the company, barely six years old, started on a Naval construction career which can be paralleled by very few private shipyards. Following completion of the WASHINGTON, the Navy ordered a total of seven battleships from the company. Many of these are familiar to merchantmen from this last war, especially the ARKANSAS, and UTAH which saw considerable convoy duty and were close by slamming shells into enemy installations ashore during several invasions. The other five built at this time were the KANSAS, NEW HAMPSHIRE, MICHIGAN, OKLAHOMA, and the IDAHO.

Destroyers built at the yard during the First World War were completed too late for combat service, but of the ten completed five saw active duty in World War II, and one, the McFARLAND, received a Presidential Citation for action in the Pacific.

If the Naval ships built by New York Ship during the period from the late twenties through the thirties until the outbreak of war had never been built, the war would have had an entirely different complexion. Largest ship ever built in the yard was the carrier SARATOGA which measured 888 feet, developed 180,000 horsepower, pushed along at 34 knots, and had a flight deck covering an area of nearly two acres. First ship of a major class to be built after the Disarmament Conference was the cruiser SALT LAKE CITY, launched in 1929, marking the beginning of our Naval rebuilding program. During the early thirties the yard built the cruisers CHESTER, INDIANAPOLIS, TUSCALOOSA, SAVANNAH, NASHVILLE, and the PHOENIX, as well as four destroyers of the 1850-ton PORTER class, and five auxiliaries.

World War II Records

During World War II New York Shipbuilding Corporation set a record which it claims has never been equalled by a private yard—delivery of Naval combatant ships from 12,000 to 35,000 tons displacement aggregating $217,000,000 in value, delivered within the twelve-month period March 15, 1942 to March 15, 1943, and completed from eight to thirteen months ahead of contract schedules. This included three carriers of the INDEPENDENCE class, with six more being delivered the following year. These carriers were already far advanced in construction as cruisers, and the yard had to draw up plans reconverting them to carriers to meet the critical shortage of this class vessel in the Pacific.

New York Ship's most famous ship of World War II, the SOUTH DAKOTA, was delivered a year ahead of schedule. Dur-

(Continued on Page 37)

T. H. BOSSERT began his shipbuilding career as an apprentice draftsman in the hull drawing room of the New York Shipbuilding Corporation, Camden, N. J., in 1908 and graduated from the Franklin Institute, Philadelphia, Pa., in 1912.

Mr. Bossert spent ten years in the hull drafting department of the Cramp Shipbuilding Company, Philadelphia, and during World War I was in charge of the hull drawing room at Merchant Shipbuilding Corporation, Chester, Pa.

He returned to New York Ship in 1930 as Naval architect, in 1942 was made vice president of the corporation, and in 1947 was made president and a director.

Mr. Bossert is a member of the council of the Society of Naval Architects and Marine Engineers and a member of the American Society of Naval Engineers.

JOHN F. METTEN entered the employ of the Pennsylvania Railroad as an apprentice in the Wilmington Shops in 1889.

In 1893 he started his shipbuilding career at the Newport News Shipbuilding & Dry Dock Company as a machinist and two years later was transferred to the engineering department of the company as a draftsman.

He entered the employ of the Cramps Shipyard, Philadelphia, as a draftsman in 1900, was appointed chief draftsman in 1904, chief engineer in 1909, and subsequently vice president in charge of engineering until 1927.

He was president of the Marine Engineering Corporation in 1927, which was organized jointly by the Bethlehem Shipbuilding Corporation, the New York Shipbuilding Corporation and the Newport News Shipbuilding & Dry Dock Company, for standardizing the design for eight large cruisers being constructed by these yards and two naval shipyards.

When the work was completed at the Marine Engineering Corporation in 1930, Mr. Metten was employed as a consulting engineer by the Matson Navigation Company, the New York Shipbuilding Corporation and the Baldwin Locomotive Works until the beginning of 1935 when he was appointed president of the New York Shipbuilding Corporation. In 1943 he was named chairman of the board.

He is a member and past president of the Society of Naval Architects and Marine Engineers, and a recipient of the David W. Taylor Gold Medal from that Society for notable achievements in the field of marine engineering.

D. A. WILLIAMS graduated from Franklin and Marshall College in 1917 and from then until 1919 was supervisor of operations at Du Pont Company, Wilmington, Delaware.

In 1919 was employed by the New York Shipbuilding Corporation as a foreman of the hull department. Subsequently he became assistant foreman of the production department, head of inspection department, general foreman of hull, assistant superintendent and superintendent of hull. He became assistant general manager in 1942 and was appointed vice president and works manager in 1947.

Mr. Williams is a member of the Society of Naval Architects and Marine Engineers and of the American Society of Naval Engineers.

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CIO MARITIME COMMITTEE: IS NATIONALIZATION THE GOAL?

Twice within a year the CIO Maritime Committee has pulled a sneak play on the shipping industry. For the reasons, read The LOG's editorial opinion and the following statements of industry and union spokesmen.

This is a tale of woe.

It is a tale of woe because it tells how politicking, selfish interest, and other obscure motivations have once again successfully wrecked any chance for long range shipping legislation in the present Congress.

The tale really began last year, for the current story is purely and simply a repetition of the fiasco reported in the August 1948 issue of The LOG.

The main difference lies in the parties responsible. Last year's failure was equally attributable to the shipping industry and to labor. This year's obvious failure can be blamed directly on labor and the U. S. Maritime Commission.

In addition to being a tale of woe, this particular tale has an element of farce—at least for any reader who may not be vitally interested in seeing a long range shipping program on the law books. But if you make your living from the shipping industry, the recent debacle in the Halls of Congress will tap you in a pretty vital spot.

Probably the most notable contribution to the world made by columnist Drew Pearson was the coining of the phrase he selected for his syndicated column, for nothing could more accurately describe the present legislative whirl than "Washington Merry-Go-Round." The biggest question is who will get the brass ring. So far it seems the CIO Maritime Committee has been particularly adept at this little sport.

But now the story.

In the *Washington Reporting* columns of The LOG last month we reported that for the first time since the war industry, labor and government seemed to be in accord as to what was needed for the survival of the merchant marine under the U. S. flag. The only qualification to this statement was to the effect that the separate parties could be expected to drive for their own particular legislation once the long range program became law.

Unfortunately we went to press too early.

The Flip-Flop

But this item was no figment of our imagination. The National Federation of American Shipping had worked out a long range program. The Association of American Shipowners, who last year opposed much of the Federation program, put its stamp of approval on the new compromise program worked out by Commissioner Mellen as Acting Chairman of the Maritime Commission. The CIO Maritime Committee, in the person of Hoyt Haddock, the Washington representative, reviewed the program and voiced no objections, implying agreement in verbal conversations. The Maritime Commission presumably agreed. All segments of the shipping and shipbuilding industry agreed. The program was endorsed by nearly every seaport Chamber of Commerce as well as the U. S. Chamber of Commerce, The American Legion, the Lake Carriers Association, the Propeller Club and the Masters, Mates & Pilots of America, AFL.

A Committee Print was made of the proposed bill and hearings were held by the House Merchant Marine & Fisheries Committee. The hearings went along smoothly. No voice was raised in objection. That is, none was raised until June 14 when John Green, president of the Industrial Union of Marine and Shipbuilding Workers of America, CIO, appeared. Green opposed nearly everything in the bill, reechoing the old familiar cry of "a raid on the U. S. Treasury."

In addition to this surprise opposition, the Maritime Commission did a flip-flop reminiscent of the days of the 1946 strike. Commissioner McKeogh, flinging flamboyant phrases at the Committee, apparently in attempted emulation of John L. Lewis, went right down the CIO line with such accuracy that it almost seemed he was reading from the same script as John Green. Commissioner Mellen took the opposite stand, in favor of the proposed legislation. Commissioner Coddaire went along with McKeogh. Chairman Fleming went the same way. Commissioner Carson stood by Mellen in support of the bill.

Thus, the day before the Maritime Commission was to appear at the hearing room to present testimony on the proposed bill, the vote was three to two *against* the legislation. At the last minute Coddaire flopped over to Mellen's side and the Commission finally appeared three to two in *favor* of the bill. It took Commissioner Mellen, who presented the Commission's final deliberation, about ten minutes to explain to the Committee how agreement was finally reached.

Repeat Performance

The final payoff came on June 29 when the CIO Maritime Committee, which had given the industry every reason to believe it would agree to the proposed legislation, filed a twenty-seven page objection to nearly everything in the bill.

This is exactly the same stunt the CIO pulled last year. Then, when it was too late to hope for passage of a bill without unanimous consent of the Senate, even though it had passed the House, the CIO raised objections which it had never mentioned during the House hearings. This effectively killed the legislation even though some of the CIO's own member unions were in Washington openly agitating for passage.

The LOG, in its August 1948 article, pointed out that from all the evidence available, the only possible conclusion to be drawn from the CIO Maritime Committee's actions was that it was pressing toward ultimate nationalization of the shipping industry. To this the CIO took violent exception.

We now reiterate our accusation. The CIO Maritime Committee is seeking nationalization of shipping. This is the only possible alternative left if we are to maintain sufficient merchant tonnage to meet national defense requirements.

Mysterious Figures

The industry has said it can, and will shoot the CIO Maritime Committee's reasoning full of holes. But the labor organization has won its point, as it did last year, by delaying any possible action until too late. The reasoning behind the CIO Maritime Committee's action is so shaky that neither Joe Curran nor John Green, big guns behind the organization, appeared willing to testify in support of the Committee's objections. This is understandable, since it is extremely doubtful that either Joe Curran or John Green could stand up for five minutes under cross examination, even if it were limited strictly to the contents of the Maritime Committee's brief.

In fact, there is a strong suspicion in Washington circles that much of the CIO's testimony originated within the Maritime Commission itself. It has been known for some time that a small group of lower-echelon employees within the Commission are ardent advocates of nationalization. However, the main evidence which supports this suspicion seems to be the use of figures in the CIO's testimony. These figures purport to give the financial facts behind the tax computations of the subsidized steamship lines. The shipping

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LONG RANGE PROGRAM

companies have refused to make these figures available to their own industry organizations, and the Maritime Commission has consistently refused to make them available to these same organizations. In this case, how did the CIO get the figures? Either it has an inside track at the Maritime Commission or else the figures they have used are pure fabrication.

A Pigeonhole Waiting in The Senate?

From all appearances the CIO has already taken adequate care of the Senate side of the situation. Senator Magnuson, who with much fanfare has undertaken a long range investigation of the merchant marine and its ills, has shown a decided disposition to slant his verbal blasts, and concentrate his investigatory efforts, along the lines laid down by the CIO Maritime Committee. Another strong suspicion being voiced around Washington is to the effect that Senator Magnuson's "investigation" is merely a cover-up for labor-backed legislation such as the transfer of ships to foreign registry, getting the Army out of commercial shipping (this is also industry-backed), and other proposals which are beneficial to labor without regard to the industry as a whole.

At any rate, if the House passes the long range bill over the violent objections of the CIO, as it did last year, it looks as though it will be shelved in the Senate. This will probably be accomplished in the following manner: Senator Magnuson will argue that since he is already engaged in a complete resurvey of the merchant marine, he believes such legislation should be laid aside pending the outcome of his investigations. There is little doubt that the Senate will agree.

Behind the CIO Maritime Committee's moves can be detected an objective which we still believe they have as their ultimate goal—nationalization of the American Merchant Marine. This conclusion can be deducted in the following manner:

The unions today have a very serious unemployment problem. Their vital need is for more ships—union ships—and for this reason they strongly oppose the transfer of ships to foreign registry. This is also why they are interested in getting the military services out of commercial shipping. However, if they were truly interested in increasing *privately owned* commercial shipping, they logically could not object to legislation designed to permit private enterprise to exist, and give some hope for expansion.

The CIO Strategy

To dig a little deeper into the problem, it is obvious that the reason this long-range shipping legislation is being introduced is to permit American steamship companies to compete with low-cost foreign tonnage. There is approximately a 50% differential in operating costs between foreign and U. S. vessels. Where is this cost? *This cost is in labor!*

The strategy of the CIO Maritime Committee seems to be to raise such a hue and cry that it will appear in the eyes of the public and Congress that the failure to maintain a competitive position is entirely that of the shipowner. Note, however, that the unions strongly oppose the often advanced proposal that subsidy should be paid directly to labor. This would place the onus (if, indeed, there must be an onus attached to operating subsidies) entirely on labor, where rightfully it belongs.

There is no possible way in which American shipowners can compete with foreign ships while a 50% differential exists, or a 20% differential if it could be narrowed to that, without government subsidy to make up the difference. The efficiency of American ships, which in the largest measure depends upon the efficiency of labor, just is not that good. If American ships can not compete, and the Congress does not enact legislation which will enable them to break even with foreign subsidized competitors, there is only one alternative—nationalization—for no one doubts that we must have a merchant marine.

A Tip for Joe

Therefore, we reiterate, the CIO Maritime Committee has but one ultimate objective—nationalization of the American Merchant Marine.

If the CIO Maritime Committee doesn't like this accusation, it can easily eliminate the reasoning behind it by getting behind the industry and supporting legislation which will enable us to keep a *privately owned* American Merchant Marine. Until they do we can arrive at no other conclusion.

And here's a suggestion for Joe Curran, who disregarded his own safety and risked the life of his union to kick out the left-wingers: make a closer scrutiny of your Washington organization to be sure it is not pulling a sneak play on you the same way it has twice pulled sneak plays on the industry. Last year we gave you the benefit of the doubt, commenting that we did not believe you were behind or in agreement with this obvious push for nationalization. We still refuse to believe you could be so deluded as to think that nationalization will benefit your union. However, we think you've made the same mistake twice, with sufficient warning about the trend your legislative efforts are taking. A third time we can not give you the benefit of the doubt.

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NFAS: A LONG RANGE PROGRAM FOR U. S. SHIPPING

Frazer Bailey, president of the National Federation of American Shipping, appeared before the House Merchant Marine and Fisheries Committee, in support of a long range legislative program for American shipping comprised of a compromise bill worked out by Maritime Commissioner Grenville Mellen, Acting Chairman of the Commission at the time.

Following are a few brief extracts from Mr. Bailey's opening statement, and a summarization of the long range program presented by him.

"Prominent members of Congress have suggested that the industry recommend fair and equitable conditions which would permit the United States to possess a merchant fleet upon the seas commensurate with our national importance and with the international obligations which we have recently undertaken. We are making progress in the acquisition of such a fleet, but we are still short of that accomplishment. The United States has the largest, newest, fastest and most modern fleet of merchant ships which have ever flown our flag. We are, however, sadly deficient in certain respects. We have only about one-half the passenger carrying capacity of our prewar fleet, and our domestic services have not been restored to their prewar status.

"It is our belief, and it is our goal, that the United States shall possess a merchant fleet of modern combination and cargo vessels sufficient to transport all of our domestic coastwise, intercoastal and territorial commerce, and at least one-half of our foreign commerce, backed by a fleet of modern passenger steamships providing transportation and commerce between the United States and important world areas.

Parity and Position

"We believe this is not an over-ambitious policy. We think it is in substantial accord with the views and desires of the American people. It does not represent encroachment upon the rights of any nation, large or small. The carriage of one-half of our overseas commerce is a position we have not consistently maintained since early colonial days. The terms which we shall recommend are designed to create economic conditions which will permit us to meet foreign competition on a basis of parity and to assist in efforts to build and maintain a merchant fleet consistent with our position in world affairs.

"Other and additional protection and aid to American shipping may be required, such as the removal of discriminatory and unduly depressed rail rates charged by competing land transporta-

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tion in unfair competition against our coastwise and intercoastal transportation; the removal of discriminatory practices indulged in by certain foreign countries to the detriment of, and resulting in unfair competition with American shipping in certain foreign areas; the transportation overseas of a fair proportion of ECA cargoes; and an equitable and fair adjustment of Panama Canal tolls to recognize the national defense characteristics of this international waterway. The proposals, however, that we are now presenting relate to certain amendments and clarification of the Merchant Marine Act of 1936.

"Recognizing that time is growing short before Congress must recess, the Federation and other shipping interests have striven diligently to reconcile divergent views and to present to the Committee uniform proposals to which all could subscribe, and which are free of controversial issues to the extent possible. These discussions have taken place with the full knowledge, and we believe the concurrences of the Shipbuilders Council of America, and the vice chairman of the Maritime Commission. They were only concluded on Thursday last and we greatly regret that it has not been possible to obtain from the Maritime Commission their full approval or their full comments.

The program which we are now submitting is comprised of six principal parts.

1. CONSTRUCTION-DIFFERENTIAL SUBSIDY

Requirement that vessels receiving construction-differential subsidies operating in the foreign trades must be operated only in "essential" trade routes is removed. (Secs. 1, 2 and 4)

2. MORTGAGE RELIEF

Purchasers of passenger vessels constructed or purchased under Title V of the Merchant Marine Act, 1936, or Section 4 of the Merchant Ship Sales Act of 1946, which are delivered subsequent to date of enactment of the bill, and which have accommodations for 200 passengers and meet certain other requirements, may have obligations under mortgages covering such vessels satisfied and discharged by surrender of the vessel to the government, free and clear of all liens and encumbrances. (Secs. 3 and 5)

3. TRADE-IN OF OBSOLETE VESSEL

Age at which vessels are eligible for trade-in under Section 510 of Merchant Marine Act, 1936, reduced from 17 to 12 years, and rate for use of obsolete vessel by owner during period of construction of new vessel to be fixed for entire period of such use at time of execution of contract for construction of new vessel. (Secs. 6 and 7)

4. CONSTRUCTION RESERVE FUND

(1) Funds deposited in construction reserve fund may be used for reconstruction and reconditioning of new vessels, as well as for their construction or acquisition, and for liquidation of purchase-money indebtedness, except that earnings hereafter deposited may be used for acquisition, reconstruction and reconditioning of vessels only with approval of Commission. (Secs. 8, 10 and 12)

(2) Tax deferment extended to deposited earnings from vessels documented under the laws of the United States, and to any or all earnings otherwise available for distribution to stockholders which are deposited with the approval of the Commission. (Secs. 8 and 9)

(3) Funds on deposit on date of enactment of bill to be obligated within two years after such date, and funds thereafter deposited to be obligated within five years from date of deposit. (Sec. 12)

5. ACCELERATED DEPRECIATION

(1) Unsubsidized operator permitted to amortize cost of vessel in such manner and in such annual amounts as he deems appropriate, provided not more than fifteen per centum of such cost is amortized in any one taxable year. Such operator required to make payments on mortgage indebtedness to United States covering such vessel to extent of an amount equal to the difference between the amortization deduction taken on the vessel for such year and the amount previously paid during such year on the mortgage indebtedness on such vessel. (Sec. 14)

(2) Subsidized operator permitted to increase regular depreciation deposits in capital reserve fund by additional deposits as depreciation charges on subsidized vessel from earnings otherwise available for distribution to stockholders, or from amounts otherwise required to be deposited in special reserve fund if amounts on deposit are sufficient to meet recapture obligations, provided amount deposited in any year with respect to particular vessel does not exceed fifteen per centum of cost of vessel. (Sec. 16)

6. DEPRECIATION CHARGES ON RECONSTRUCTED OPERATING SUBSIDY VESSEL

Operator of reconstructed operating-subsidy vessel permitted to require Commission to recompute life-expectancy of such vessel, and depreciation charges on such vessel for capital reserve fund deposits to be computed on life-expectancy determined. (Secs. 15 and 16)

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JOHN GREEN: A RAID ON THE U. S. TREASURY

John Green, president of the Industrial Union of Marine & Shipbuilding Workers of America, CIO, appeared before the Merchant Marine & Fisheries Committee in opposition to the proposed long range shipping bill. Excerpts from his opening remarks, and a summarization of his objections, follow:

The Weichel Bills, of course, as we all know, were not passed. When this present Congress opened its session we were all hopeful of the fact that something concrete and constructive would finally be done regarding the American Merchant Marine, and that legislation would be introduced or hammered out which would promote the interests of the Merchant Marine and keep it afloat.

Much to our surprise and sorrow, at the beginning of this session of Congress, the National Federation of American Shipping again proposed legislation which we could call only a proposal for a raid on the United States Treasury. These proposals, which were given to the House Committee on Merchant Marine and Fisheries at the end of March, 1949, provoked an editorial in "The Nation" magazine of April 16, 1949. The fifth paragraph of this editorial is well worth considering by the present Congress.

> "One thing is certain; whatever aid we give to American shipping should be given in the national interest, not in the interest of private profit. Yet the shipping companies are always asking for more. Their present demands may even give them exorbitant profits without providing any incentive to increase cargo space."

This mistake must not be made. It cannot be made if the industry is to survive in the hands of private enterprise. It cannot be made if we do not want socialized shipping. It is really about time for this industry and the Congress to submit the necessary requests for amendment to the Merchant Marine Act in such form that they can be acceptable to the Treasury and the taxpayers, and forget about lining the pockets of the shipping operators.

Summary of IUMSWA Opposition

The economy of this country requires a strong Merchant Marine. The Merchant Marine Act of 1936 had its normal development interrupted by the past war. This Act does require amendment but we must be very careful that the amendment will not spoil the remarkable reputation of one of the few acts granting subsidies which has never come under attack because of misuse of funds. Whatever aid we give to American shipping must be given in the national interest, and not in the interest of private profit. We must take care that we will not strangle the industry we are ostensibly trying to protect.

The Union is in favor of amending the Merchant Marine Act of 1936 to extend the construction differential subsidy to all vessels engaged in the foreign commerce of the United States, whether or not such vessels receive an operating

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differential subsidy. We also believe that this construction differential subsidy should be applied to every vessel of ocean-going tonnage built in this country. We see no reason why this subsidy, which is to compensate for higher American standards of living, greater safety requirements, and for cost of defense requirements, should not be extended to every vessel of ocean-going tonnage.

We are opposed to limited liability for passenger vessels, unless such passenger vessels are defined as vessels of over 30,000 tons, accommodating 1,000 or more passengers, with a designed speed of not less than thirty knots, and with a capital investment by the purchaser of not less than $20,000,000. Instead of limited liability for passenger vessels, we would propose that Congress simply pass a joint resolution that all passenger vessels necessary for national defense are to be constructed under Title 7 of the Merchant Marine Act of 1936 and chartered under the same Act.

We propose that Section 507 of the Merchant Marine Act be extended to provide that depreciation allowance on reconditioned vessels be extended to more than a 20-year life expectancy if certified by the United States Coast Guard and the United States Maritime Commission. We also propose that the provisions of Section 507 and the present Section 510 be extended to include all ocean-going vessels engaged in domestic as well as in foreign trade.

We are opposed to any amendment of the present Section 510 of the Merchant Marine Act of 1936.

We are opposed to the extension of the privilege of accumulating earnings under special reserve funds, to all owners and operators. We are specifically opposed to the extension of time for the operators to use the monies in these reserve funds from two years to five.

If something must be done for presently unsubsidized operators, both foreign and domestic, we would propose that the operating differential subsidy provision of the present Merchant Marine Act of 1936 be extended to all operators of ocean-going tonnage. One might also provide that every ocean-going vessel in the United States be built under Title 7, and chartered to the operators. *(Editor's comment: this is a bald proposal for nationalization with the government chartering all ships to private operators.)*

We are opposed to the provision for accelerated depreciation, because we believe that this would completely negate every effort to use the monies thus obtained for the purpose of building new vessels. If accelerated depreciation must be passed, we submit that the Congress should provide that if these monies are not expended for the construction or acquisition of new tonnage within two years from the time of depreciation of a vessel, the money shall be liable either to punitive taxation or to confiscation.

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BAILEY TO GREEN: SOUND BUSINESS PRINCIPLES

Frazer Bailey, president of the NFAS, makes the following comments on John Green's charges before the House Merchant Marine & Fisheries Committee:

(1) Mr. Green says he opposes "any raids" on the U.S. Treasury. So does every good American. The shipping and shipbuilding interests of the United States yield to no one in their advocacy of the principle that the public interest is paramount. But after the government's interest has been amply protected, we suggest that the most favorable economic conditions "consonant with sound business principles" (to use President Truman's words)* should be created to permit private capital to build and operate the required vessels for our Merchant Marine.

(2) Mr. Green proposes that all passenger vessels necessary for national defense be constructed and owned by the government, and chartered for operation. It is the straight and narrow path to complete government ownership and nationalization of industry. On the contrary, President Truman asked the Maritime Commission in his letter of April 16, 1948, to secure the cooperation of private enterprise to build the ships required for national defense.

Mr. Green's suggestion that he approves loans without deficiency recourse only if restricted to vessels of at least 1,000 passenger capacity, 30-knot speed and costing the owner more than twenty million dollars, is obviously impracticable. If we are to attract the investment of large amounts of private capital into these expensive ships of low earning potential, the government must take part of the risk, as it does in agricultural loans.

A Sound and Practical Basis

(3) Mr. Green suggests that a construction and operating subsidy be granted to every ocean-going U.S. vessel. This presumably means in domestic as well as foreign trades. While our domestic trades need all the economic assistance possible "consonant with sound business principles" the present subsidy law cannot be so easily adapted to their pattern. Its fundamental principle is equalization of costs with actual foreign competition, to provide "parity", i.e. equal economic opportunity.

Domestic shipping (between U.S. ports) is wisely protected by law against competition from low-wage and cheaply-operated foreign ships. No differentials for equalizing costs and expenses can be computed where foreign competition does not exist. When a form of aid which will assist in the restoration of our domestic shipping can be formulated "consonant with sound business principles" the American shipping industry will be its strongest advocate.

We are trying now to develop plans to provide such assistance as may be fair and reasonable to domestic shipping—among which is the recognition of the national defense character of the Panama Canal. Here tolls have, in the past, been charged exclusively against commercial shipping (although the Canal is used by government ships) and on a basis to yield all costs and interest upon the government's investment. We would welcome Mr. Green's ideas and assistance to stimulate domestic shipping upon any sound and practical basis.

Trade-In of Obsolete Ships

(4) Mr. Green says he is opposed to any amendment to the present law (Section 510—1936 Merchant Marine Act). This section allows the U.S. Maritime Commission to trade in old vessels as part payment on new vessels, in order to permit an early and orderly replacement program, and to keep our Merchant Marine up to date. A majority of the vessels of the present fleet were built during the limited period of the war years, and consequently will all become obsolete at approximately the same time.

Our proposals amend this section in only two respects: (a) that the U.S. Maritime Commission is *authorized* to accept vessels for trade-in allowance when 12 years and older (instead of the present 17 years); and (b) a definition as to what constitutes a desirable vessel for trade-in purposes.

There is no change in valuation formula; or in other respects. It only permits an entirely voluntary arrangement on both sides. The industry must otherwise wait an additional five years before the Maritime Commission would have authority to act under this section except in a very few instances. Meanwhile our fleet would be growing older; and our shipyards idle.

(5) Mr. Green testified he was opposed to owners having the privilege of accumulating earnings and other revenue in joint-account deposits with the government under Section 511 of the Act for the purpose of building, acquiring, and reconstructing ships, and for the paying off of purchase money mortgages. We do not see how this position could possibly square with the welfare of the men he represents. True, the owners would get tax deferment (not exemption) under which the Government collects its tax, but does so at a later date. Meanwhile

*(Letter to Chairman, U.S. Maritime Commission, April 16, 1948)

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more money is immediately available for the building of ships, and for wages for shipyard workers; and more jobs for seafarers.

Plowing Back Earnings

While it is quite true that shipping profits have been substantial during the war period and immediately following it, nevertheless, such earnings over a long period have always been of a highly fluctuating character. For this reason capital does not come forward readily for investment. It is most desirable to keep within the industry all of its present funds. Unless there is an incentive to "plow back" earnings, it is reasonable to expect these will be distributed. Ships are costing progressively more. From whence will come the capital to build and replace ships; maintain our position on the seas; and provide jobs for shipyard labor and seafarers? How could the United States, or Mr. Green's men, profit by the course he advocates?

Tax matters are necessarily technical and complicated. Should there be any inconsistencies in the proposals before the Hart Sub-committee, we have every confidence in the Treasury Department's ability to point them out.

(6) Mr. Green opposes the provision of accelerated and flexible depreciation which is designed to permit capital to gear itself to cycles of fluctuating earnings. Some such arrangement is permitted to its shipping by every foreign maritime nation. Our ships in the foreign trades would be at this competitive disadvantage. He further suggests, "punitive taxation" and "confiscation" under certain circumstances. These are completely contrary to our American concepts. To say that some of the proposals would stop shipbuilding "in this country in its tracks" and that "nobody would build any ships" we do not believe can be factually supported.

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MELLEN: FROM THE MC A SPLIT DECISION

After the confusion in the Maritime Commission, reported in the lead article of this series, Commissioner Grenville Mellen, speaking for the final majority vote of the Commission appeared before the House Merchant Marine and Fisheries Committee. The testimony was long and complicated, but the highlights were as follows:

1. Construction differential subsidy favored for ships in foreign trade without requirement that they be restricted to essential trade routes. Mr. Mellen offered, however, his personal viewpoint that consideration should be given as to whether, if applied to tankers, this might have a financially detrimental effect upon those who had purchased tankers for American flag operation under the ship sales act. The printed report stated that the legislation concerned was premature as concerns tankers and tramp vessels but Commissioner Mellen stated that this sentiment had not been approved by the Commission and deleted it from the report as having been included in error.

2. The Commission opposed limited liability under mortgages for passenger vessels upon the stated principle of undesirability and lack of necessity. He also stated that the owners were building without this provision and other applications for construction were now pending. (It should be noted that the MC made substantially the same recommendation last year but the Merchant Marine Committee ignored it and voted to the contrary.)

3. The Commission took the position that reduction of the age eligibility for turn-in of vessels under Section 510 of the 1936 Act should not be granted, but that Section 507 should be made applicable to domestic ships.

4. The Commission advocated many minor changes in the handling of Section 511 deposits, but generally approved the expansion of the existing provisions of this section.

5. The Commission advocated accelerated depreciation but limited to 10 percent per annum together with the right to pick up in addition hereto any back depreciation accruing after passage of the amendment, to bring the average up to 10 percent on the basis of cumulativity.

6. The Commission advocated adjustment of depreciation on subsidized vessels to conform to the extended life when reconstructed or reconditioned.

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CIO vs. NFAS: THE BATTLE OF THE TAXES

Editor's Note:

The following article is the statement made to the House Merchant Marine and Fisheries Committee by Hoyt Haddock, Washington representative, CIO Maritime Committee, with a rebuttal by Frazer Bailey, NFAS.

Since the CIO statement was so long, we have inserted Mr. Bailey's answers to the charges within the text of the CIO statement. Mr. Bailey's remarks appear in BOLDFACE TYPE.

The House Committee did not allow rebuttal to any statements, and the NFAS comments throughout this article were prepared especially for The LOG. This seemed the fair way to present the CIO statement, since so much of it is disputed by the industry.

The CIO Maritime Committee supports the Merchant Marine Act of 1936 as a fair and workable compromise between the need to provide subsidies for the maintenance of an adequate American merchant marine and the need for protection of the public interest in the disbursement of these Federal funds.

Subsidization is necessary for two reasons. The first is the common practice of all major maritime nations to subsidize their fleets in one manner or another. France and Italy are financing the rebirth of their merchant marines largely out of ECA counterpart funds. Holland makes long-term loans available for ship construction at low interest rates. These are but a few examples of foreign maritime subsidization and they constitute one of the reasons why subsidization is necessary in the United States.

The second reason is our higher operating costs due to a higher standard of living and greater safety. It has been possible for our nation through its ingenuity and know-how to completely overcome this factor competitively in regard to articles of mass production. It is not equally possible in connection with a ship which is an item of heavy capital

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investment and relatively long economic life. While we may build the most modern and advanced ships to overcome our competitive disadvantages, it is inevitable that during the economic life of such ships they will be competing against more modern, more efficient and more speedy tonnage built at a later date.

Thus, believing as we do that an adequate merchant marine is essential to the national defense and the economic welfare of our country, we favor proper subsidization of the American merchant marine.

The Black Herring

Subsidies inevitably lead to excesses and excesses lead to public reaction against subsidies. That is the reason we have always urged the most careful scrutiny and most thorough investigation of proposals to amend the Merchant Marine Act of 1936 which has been the least corruptible of any system of marine subsidies in the history of our country.

We think it is important at this time to recall that the Merchant Marine Act of 1936 had its basis in the outstanding investigation of airmail and oceanmail contracts conducted under the Chairmanship of former Senator Hugo Black during the 72nd, 73rd and 74th Congresses. That investigation exposed the scandalous practices being carried on under the Merchant Marine Act of 1928 and laid down the pattern for the Merchant Marine Act of 1936.

Speaking of the Merchant Marine Act of 1928, Report No. 898 of the 74th Congress states: "Instead of an adequate American merchant marine it (Merchant Marine Act of 1928) has produced unconscionable exploiters, intent upon wringing every possible penny from the public purse, while giving an absolute minimum service in return. While it has given birth to a situation to delight unscrupulous, self-seeking individuals, it has caused the marine subsidy of this nation with real reason to become known as 'pie.'"

It is our purpose to prevent any repetition of this unhappy period in the history of the American merchant marine.

Fact or Fantasy?

Before proceeding to present our views in regard to the various amendments to the 1936 Act now before this Sub-committee we should like to bring the following facts to your attention:

1. *The operating differential subsidy granted under Title VI of the 1936 Act is of relatively minor importance compared to the other benefits available for subsidized operators under the Act, notably the tax advantages.*

The total subsidy accrued at the expiration of ten operating differential subsidy contracts (seven expired on December 31, 1947, and three expired on September 30, 1948) was $63,500,000. The total estimated recapture (one-half of earnings in excess of 10% of net investment) was $46,500,000. Thus the actual cost to the U. S. Government was only $17,000,000 or roughly $1,700,000 per year.

On the other hand the advantages accruing to the subsidized lines in connection with the tax advantages granted by Section 607 of the 1936 Act may have reached $140,000,000.

During the years 1938 to 1948 inclusive, 12 subsidized steamship lines deposited $382,165,095.93 in the capital reserve fund established under the 1936 Act. These deposits included depreciation, receipts from insurance on the loss of vessels and from sales on the sale of vessels, and such percentage of the profits of these lines over 10% as the Maritime Commission required. During the same period these 12 lines deposited in their special reserve fund, $115,960,609.12, constituting all their profits over 10% on capital necessarily employed in the business except that proportion over 10% which the Commission required to be deposited in the capital reserve fund. The total deposit in the two reserve funds was $498,125,705.05.

A Red Herring

For a long while the subsidized lines and the United States Maritime Commission acted on the supposition that monies deposited in these funds were permanently tax-free if they were utilized for the purposes specified in the 1936 Act. Largely at the initiation of Representative Henry Jackson, formerly a member of this Committee, the matters of the subsidized lines improperly depositing wartime profits in these tax-free funds during periods while the subsidy contracts were in suspension and the Maritime Commission's improper approval of such deposits were corrected and the United States Treasury recovered approximately $15,000,000 in taxes improperly withheld. As a result of this investigation an understanding was worked out between the subsidized operators and the Bureau of Internal Revenue as to the proper interpretation of Section 607 of the 1936 Act. This interpretation is that the monies deposited in the various reserve funds established under the 1936 Act are only tax-deferred and not tax-free. This means that when these monies are ultimately put into the acquisition or construction of new vessels the depreciation base of these new vessels must be reduced accordingly.

Disputed Passage

However where these funds are continuously retained in the business by placing them in the acquisition or construction of new vessels, by subsequently placing the proceeds from depreciation insurance or sales money and profits on these vessels in the funds, and by subsequently acquiring new tonnage to replace this old tonnage, the actual effect is permanent freedom from taxation.

Of the $498,000,000 deposited in the special and capital reserve funds, in excess of $139,000,000 were operating profits and in excess of $66,000,000 represented capital gains. Since nearly all of the $139,000,000 was accumulated in the war years, had it not been deposited in the reserve funds, it would have been taxed at a rate of 75 to 80%. Thus the tax saving was $104,000,000 to $111,000,000.

Shipping and Manufacturing

The tax saving on the $66,000,000 in capital gains was $16,500,000. Thus the total tax savings may have been as high as $140,000,000.

2. *The subsidized lines have made exceptional financial recoveries under the 1936 Act and are now in excellent financial condition.*

The following table shows the net worth of each of these lines as of June 30, 1937, and as of December 31, 1947, and the percentage increase in net worth:

Company	Net Worth 6/30/37	Net Worth 12/31/47	% increase
American Export Lines	$ 2,838,000	$ 39,825,000	1303
American Mail Lines	1,930,000	7,862,000	307
American President Lines	2,493,000	20,924,000	739
Farrell Line (Amer. So. African)	1,453,000	15,507,000	967
Grace	16,802,000	38,679,000	132
Lykes	3,991,000	63,938,000	1502
Miss. Shipping	2,624,000	14,323,000	446
Moore-McCormack	1,917,000	37,208,000	1841
N. Y. & Cuba Mail SS	3,148,000	14,236,000	352
Oceanic SS	6,686,000	16,243,000	147
Seas Shipping Co.	966,000	18,717,000	1831
U. S. Lines Co.	5,026,000	35,900,000	616
Total	$49,874,000	$323,362,000	549

A comparison with the increase in net worth of all of the major manufacturing companies during the same period will show the amazing financial growth of the subsidized steamship industry. According to the Securities and Exchange Commission, all of the listed manufacturing concerns in the United States (holding about 60% of all assets of all manufacturing concerns in the United States) had a net worth of $23,700,000,000 in 1937 and a net worth of $36,300,000,000 in 1947, an increase in net worth over the ten years of 52%. The percentage increase in net worth of the subsidized shipping lines was tenfold greater than that for all listed manufacturing corporations.

Sins of Omission

Mr. Haddock directs the first part of his statement to the theory that the subsidized lines have been financially successful during the eleven years, 1938 to 1948 inclusive, and that amendments as proposed to stimulate further building and increasing United States shipping are unnecessary and inadvisable.

It has never been denied that during this period, which included World War II, all shipping—United States and foreign—sub-

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sidized and unsubsidized—were prosperous.

He does not, however, point out: (a) That during the years when the United States was engaged in World War II the American government took over the use and operation of all American sea-going shipping and paid only what the government itself determined to be "just compensation" for the use of the ships. (b) That during such time the operating subsidy contracts were suspended and no operating subsidies were paid. (c) That the profits of American shipping were not inconsistent with that of the ships of other nations during the same period. (d) That the conditions which brought about and supported the war activities stimulated ocean transportation and increased the rates and values of shipping property and that the prosperity of the United States shipping was not as may be inferred from Mr. Haddock's statement due to the act of an over-generous government or from subsidy payments.

That this is true follows from Mr. Haddock's statement that of 63½ million dollars in operating subsidy payments made, 46½ million dollars or 73 percent thereof was recaptured by this government out of the profits of the shipping companies with the net effect that during a period of eleven years twelve major shipping companies, with large fleets of ships and large investments operating over thirty-three essential trade routes selected by the United States government, received, in the aggregate, only 17 million dollars operating aid.

And what Mr. Haddock could have told you is that more than 80 percent of this money went to his men to equalize United States standards of wages and better food. The balance went for higher wages to shipyard workers to repair these vessels and an almost negligible amount for increased insurance premiums on the higher valued ships constituted the balance.

Paradoxical Profits

Mr. Mellen quite properly told you that subsidy payments are not and should not be considered *income*. In true essence it is an offset against operating costs to bring the American ship down to the level of the competing foreign ship. Not 5c of such subsidy payments is or can be available to the owners of these shipping companies for any purpose or to the stockholders for dividends.

Now it seems paradoxical that under these conditions Mr. Haddock should appear to complain that the ship owners have not distributed these fortunate war-period profits to their stockholders or otherwise dissipated them, but have, to a very great extent, plowed them back into the business and reinvested them in more and better ships to the advancement and modernization of our merchant marine and in providing more jobs and better quarters for his seamen.

But beyond all this, Mr. Haddock has made some very serious errors in an analysis of the published figures of the Maritime Commission. He says that in this eleven year period the twelve lines deposited 498 million dollars in the capital and special reserve funds of which 139 million dollars represented operating profits.

He says "since nearly all" of the sum (139 million) "was accumulated in the war years" * * * "it would have been taxed at a rate of 75 to 80 percent" thus saving (the shipowner presumably) 104 million to 111 million dollars. Mr. Haddock overlooks the fact that of the eleven year period (1938 to 1948 inclusive) the United States was only in the war beginning December 1941 and that after 1943 all such earnings became *tax deferred* under a formal agreement executed with the Treasury Department. Hence only three of the eleven years to which he refers were United States war years under the tax exemption provision.

But further than this, he applies a tax return of 75 to 80 percent which is the top bracket tax rate applied only to the top segment or layer of taxable profits. Taxes cannot be accurately computed except by application to the facts relating to the individual company. By typical example, however, we note that the average rate (as distinguished from the top bracket rate) of very prosperous shipping companies during war years was more nearly in the neighborhood of 50 percent. When these corrections are applied to Mr. Haddock's figures, the result is radically different.

Net Worth Is Not a Measure

In another portion of his statement Mr. Haddock deals with the net worth of the twelve subsidized companies, i.e. how much their net assets were worth on June 30, 1937 and similarly on December 31, 1947. He says the average increase in the value of such net assets during a period of 10½ years is 549 percent. But Mr. Haddock does not tell you, and he probably does not know, how much additional capital was added by these companies during that period or that these figures, in certain instances at least, include business assets of these companies entirely unrelated to subsidized operation or even unrelated to the shipping business itself.

Mr. Haddock refers, in his statement, to the war profits of manufacturing plants, which he says, in the aggregate, were less than shipping profits if judged by net worth at the end of the war period. But he does not tell you that these companies during the same period distributed many billions of dollars in dividends which would have been reflected in their net worth had they been plowed back in large amounts as was the case with the American shipping companies. Mr. Haddock may not be aware that these same manufacturing plants were, in many instances, being allowed to write off their plant investments as a war facility at the rate of 20 percent per year for five years as a charge against their tax liability. The American shipping companies represented by the Federation do not deny that they earned good profits during the war but the fact that they conserved these funds and have been and are investing in more and better American ships, they believe to be to their credit. An incentive to do this was provided by the operation of the capital reserve fund which Mr. Haddock criticizes. Had the American shipping companies not been thrifty and husbanded their reserves, how could United States citizens have purchased or committed themselves to buy 900 million dollars in vessels under the Ship Sales Act. And how could they be considering today ways and means to build the passenger ships which President Truman and the National Military Establishment desire for convertible troop ships.

3. *The unsubsidized lines have prospered too.*

The American Hawaiian Steamship Company had a net worth of $8,195,000 in 1937 and a net worth of $25,444,000 in 1947, an increase of 210%.

The Luckenbach Steamship Company had a capital deficit of $864,000 in 1937 and had a net worth of $15,887,000 in 1947.

The McCormack Steamship Company had a net worth of $1,109,000 in 1938. No separate figure is available for its successor, the steamship division of Pope & Talbot, Inc., but the net worth of Pope & Talbot, Inc., today including its lumber and real estate divisions, is in excess of $23,000,000.

The Pan-Atlantic Steamship Corporation, the Waterman Steamship Corporation's subsidiary in domestic operation had a net worth of only $350,000 in 1937. The parent company, the Waterman Steamship Corporation, today has a net worth of $24,481,000.

These are but a few examples to show the phenomenal financial improvements in the condition of the unsubsidized steamship lines.

4. *While we may have a privately-owned American merchant marine, we do not have a privately-financed American merchant marine.* This is an extremely important fact to keep in mind. Whenever measures are advanced such as HR 3291 which seek to foster the American merchant marine from a public point of view, the cry of "private property rights" and of "you must not discourage investment in the merchant marine" is raised. Many beneficial measures to the American merchant marine have failed of enactment because of this cry. Yet upon investigation, we find that while the shipowners may have legal ownership of the American merchant marine, in large measure the American public has paid for the development of our merchant marine.

That Black Herring Again

The oceanmail contracts investigation pointed this fact out very forcibly as follows:

> "Even the merchant marine we have cannot fairly be described as 'privately-owned.' When all mail contracts (except for the industrial United Fruit Company are considered), it is found that the Government has 'invested' by loans and ship sale mortgages on contractors vessels 1.39 times the stockholders interest in their companies. This investment by the Government excludes more than $120,000,000 so-called 'mail pay,' and a similar expenditure under the managing operator agreement which government money is responsible for the major portion of the operators present capital. Not only that, but Government fees on certain vessels amount to 60% of the fair value (cost less depreciation) of the whole fleet. This is 'rock-bottom' estimate of the Government investment as it excludes the $451,201,354.48 excess wartime construction cost over and above value, and it also excludes $32,561,229.90 which represents the difference between the unrestricted value of the ships, and their value in the restricted trades for which they were sold."

That is a statement of how a Senate Subcommittee viewed private ownership in 1935. Today we are prone to forget these facts. It is true that the ratio of stockholders interest to Government "investment" in the merchant marine has been reversed, but largely at the expense of the taxpayer. A few years ago your Committee unearthed scandalous practices in connection with the Red Sea charters, wartime acquisition and chartering of vessels, etc., and in your Committee's reports, you severely criticized numerous transactions between Government

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agencies and the shipowners and effected the recovery of substantial amounts of money for the Government.

We have prefaced our statement in connection with the bill now under consideration by the Subcommittee with these facts because they are extremely pertinent to the proposals contained within the bill. These facts will better enable us to understand and appreciate the ramifications of the proposals contained in the Committee Print. They will enable us to understand why the unsubsidized lines are not pressing for extension of the operating differential subsidy but do seek extension of the tax advantage provisions of the 1936 Act.

A Lesson in Finance

Mr. Haddock says that we do not have a privately financed merchant marine; but while the owners may have legal ownership, in large measure, the American public has paid for it.

If he is referring to government loans to aid in the purchase of these ships, we do not believe he will contend that the government loans are not being fully and promptly paid. When this has been accomplished, has not the ship owner in fact paid for the ships perhaps by the sweat of his brow, even if necessarily in installments and with interest? When this identical procedure is followed with private financing, has it ever been seriously contended that while the individual holds legal title to a piece of property the bank has, in fact, paid for it?

If we did not know Mr. Haddock to be an honest and forthright individual, we would be greatly concerned about such specious arguments as we would also be about his reference to the Black investigation and conditions which existed more than fifteen years ago which have no bearing whatever upon the proposals before your Committee.

Construction Subsidy for All

The CIO Maritime Committee supports the extension of the construction-differential subsidy to all vessels operating in the foreign trades. The purpose of this subsidy is to maintain an American shipbuilding industry so necessary for a balanced peacetime economy and so essential in time of emergency. There is no justification for discriminating against non-subsidized American operators in this regard.

We note from Senate Report 898 of the 74th Congress, the Black Report, a recommendation that "the construction subsidy should be available to all American shipping operators engaged in foreign commerce upon the same terms." We have not had an opportunity to track down the facts on how the construction-differential subsidy became tied down to essential trade routes in the final version of the 1936 Act.

The construction-differential subsidy is a direct subsidy. As such it is subject to close public scrutiny and carries less danger of manipulation and perversion than indirect subsidies. It is entirely justifiable in view of the nature of the industry, its place in the national economy and defense, the level of living standards in competing shipbuilding nations and the different safety requirements of American vessels. Moreover, extension of this subsidy to all American overseas shipping will encourage timely replacement programs and serve to keep the American merchant marine modern and efficient.

Two clarifying amendments are necessary. Sec. 1 of the Committee Print amends Section 501 (a) to make the construction-differential subsidy available to any citizen building a vessel "to be used in the foreign commerce of the United States." It should be stated clearly in this section that United States flag tramp ships are eligible for the construction-differential subsidy. In the absence of such provision, tramp operators may be unintentionally denied the subsidy since they at times engage in commerce solely between foreign countries.

It is also necessary to make provision for the use of subsidized vessels in the domestic trades by proportionate repayment of the subsidy for such periods of service. Section 506 makes such provision for the intercoastal portions of round-the-world voyages, Atlantic Coast to the Orient via the Pacific Coast vovages, and Pacific Coast to Europe via the Atlantic Coast voyages. However no provision is made in the 1936 Act for use of a vessel constructed with a subsidy in the domestic trades. Such flexibility is desirable and Section 506 should be amended to so provide.

Limited Liability

Limited liability on passenger vessels would enable a subsidized operator to repudiate his contract with the government and to continue to receive benefits thereunder.

Most American flag passenger vessels operate on essential trade routes under the provision of operating subsidy contracts. These contracts, in return for the benefits accruing to the operators, require a return commitment to provide regular service of a specific type. The operator theoretically must adequatelv service his trade route with American flag operations or lose his subsidy contract. The Maritime Commission has been lax in not pressing subsidized operators to build the vessels required under the terms of their subsidy contracts with the Government.

Mr. Frazer Bailev in explaining the obligations of the subsidized operators to this Committee on June 8 said:

> "The subsidized contractor is required by the law, by his contract, and by the regulations of the Maritime Commission to continue to serve the particular trade route for the duration of the contract."

Limited liability would allow an operator to return a passenger vessel essential to his service to the Government, losing his equity but also canceling his mortgage obligation. Does this not amount to total repudiation of his contract with the Government? Will the operator expect the Government to allow him to continue the subsidized freighter operations?

How to Build a Passenger Ship for a Million Dollars

It is commonly said that the passenger services may at times have to be "carried" by the freighter services. If an operator can repudiate the passenger ship requirements of the contract and retain the freighter service it will be impossible to get any other operator to take over the passenger service alone. American flag operations may be completely eliminated from the particular passenger services if the principle of limited liability is adopted.

It was stated by the operators last year that passenger vessels would not be constructed unless limited liability was granted. The statement was improper since the operators were then committed to build under their contracts with the Government. Since that time contracts have been let for the construction of six major passenger liners and negotiations are under way on a number of others proving that the lack of limited liability is no major drawback but merely another effort to secure improper advantage over the Government.

The Committee Print would permit limited liability on vessels having "a total construction cost of not less than $10,000,000." Deducting the cost of national defense features which may run as high as $2,000,000 on such a vessel, and the construction-differential subsidv which may constitute as much as 50% of the remaining $8,000,000, the shipowner's share may be as little as $4,000,000. Since a down pavment of only 25% is required the initial investment of the shipowner in a $10,000,000 vessel may be as little as $1,000,000. This is far less than the cost of a modern freighter. On the new $67,000,000 superliner, the initial investment will be only $7,000,000. In reality it is the Government that takes 90% of the risks today. If we are to have private enterprise why expect the Government to take all the risks?

Why invite a shipowner to throw in the towel? Why make it easy for him to give up when the going gets tough? Shipowners like to talk of shipping cycles, with 7 bad years and only 2 or 3 good years. Will limited liability enable them to turn their passenger vessels back to the Government in the poorer years and then re-buy them at a song in later years?

Labor Out of Its Element

There are statements contained in Mr. Haddock's presentation which do not square with the facts, such as when referring to limited liability, he inquires whether this will "enable them to turn their passenger vessels back to the government in poor years and then re-buy them at a song in later years." Nothing in the proposals before this Committee justify any such supposition or inquiry. While the government may have some money invested in national defense

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features, entirely at its option and according to its desire, the government cannot take 90 percent of the risk (as alleged) of the commercial ship in any instance. This, notwithstanding the fact that the government does take 90 percent of the risk in agricultural loans of a non-recourse character. The ship owner will always have invested 25 percent of the purchase price of the vessel, plus one or more years installments of 5 percent, amounting in the aggregate to a very large sum on the expensive passenger vessels, to such extent that this would be sacrificed in the hope that the vessel may be re-purchased "at a song" or any other more favorable basis at some future time, has a severe reflection upon their business judgment.

The ship owners can understand comments of this character from labor sources which are somewhat outside of the sphere of their normal activities. However, they would view with concern similar comments from a government agency such as the United States Maritime Commission were it not for the fact that last year the Commission, in reporting on Resolutions H. J. Res. 412 and H. J. Res. 413, which contained similar proposals, used exactly the same language, i.e. "undesirable in principle and not really necessary," as has been used this year in reporting on Bill H. R. 5346. However, the Merchant Marine and Fisheries Committee reported these bills favorably and they were thereafter passed by the House of Representatives.

Death and Taxes

The CIO Maritime Committee testimony before the House Merchant Marine and Fisheries Committee on the long range legislative program contains the following statement:

"However, where these funds are continuously retained in the business by placing them in the acquisition or construction of new vessels, by subsequently placing the proceeds from depreciation insurance or sales money and profits on these vessels in the funds, and by subsequently acquiring new tonnage to replace the old tonnage, the actual effect is permanent freedom from taxation."

The statement is erroneous. True, profits may be deposited, successively and taxes deferred thereby—but the effect is cumulative. Eventually comes the day of accounting.

It should be borne in mind that business is a venture. It has been said that nothing but death and taxes are permanent. All business transactions must come to an end. This may result from a taxpayer disposing of his interest in a business. Or the entire business may be liquidated. When either occurs the tax collector is waiting in the ante-room.

Trade-In of Obsolete Vessels

Two sections of the 1936 Act provide reasonable trade-in allowances on obsolete tonnage. Section 507 provides for trade-in of vessels, ten years and older, at "a fair and reasonable valuation, which valuation shall not exceed the cost to the owner or any former owner plus the actual cost previously expended thereon for reconditioning, and less a reasonable and proper depreciation, based upon not more than a twenty year life." Section 510 provides for the trade-in of vessels, 17 years and older, at "the fair and reasonable value," which value is determined by taking into account the scrap value, the depreciated book value and the market value.

The argument that new trade-in authority is necessary in order to reduce the age limit to 12 years is inaccurate since Section 507 provides for trade-in after 10 years. The only purpose of the new language is to increase the trade-in allowance. For vessels between 10 and 17 years of age the depreciated book cost is a fair trade-in allowance. Thus a vessel purchased at $1,000,000 ten years ago could be valued as high as $500,000 under Section 507, and one fifteen years old as high as $250,000. For vessels 17 years and older there are alternative or joint evaluation criteria in Section 510 which are reasonable. The industry has not suffered under Section 510. Trade-in allowances from five to fifteen times the original purchase price on vessels twenty years and older were permitted by the Maritime Commission during the war.

It is important to look at the proposals in their entirety to see the full effect of the new trade-in proposals and the reasons therefor. They include provision for accelerated depreciation up to 15% per annum. Thus a vessel can be completely depreciated under these amendments in less than seven years. Suppose a shipowner had paid for his vessel out of what would otherwise have been taxes in seven, eight or ten years. Section 507 is no good to him since he has no book cost left. Section 510 would not apply until the vessel is 17 years old and then one of the criteria would be set at zero.

The combined effect of trade-in and accelerated depreciation provisions is to allow a shipowner to pay for his capital equipment in what in other businesses would go in taxes and then to turn around and resell the vessel to the Government at a substantial sum.

It is said by the shipowners that Section 507 was never used. This is not accurate as the Grace Lines did trade in one vessel under the provisions of Section 507 and appeared very pleased with its terms. In fact the terms were so generous that Grace desired to trade in two additional vessels under Section 507 but the transaction was rejected by the Maritime Commission. The reason Section 507 was not widely used prior to the war was the absence of vessels under 17 years of age in our fleet. In contrast, a very large portion of our fleet today is composed of war-built vessels ranging in age from four to eight years. These vessels will soon be eligible for trade-in under Section 507 at generous prices.

We believe Section 507 will encourage trade-ins and will be fair to both Government and shipowner. We urge amendment of Section 507 to make it applicable to the domestic trades as well as the foreign trades. This can be done by striking out the words "in the foreign trade" found in the first sentence of Section 507.

Construction Reserve Fund

It is proposed that certain benefits now enjoyed by the subsidized operators in regard to deposits in the capital and special reserve funds be extended to unsubsidized operators in regard to deposits in the construction reserve fund under

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Section 511 of the 1936 Act. The most important extension is the power given to the unsubsidized operators to deposit earnings in the construction reserve fund and to secure the advantages of tax deferment on such earnings. The unsubsidized lines argue that they are entitled to equality of treatment in regard to tax matters with the subsidized lines. They claim they do not want subsidies (meaning operating subsidies) but they should not be penalized for operating without subsidies.

The facts given in the introduction to our statement in regard to the comparable benefits accruing to the subsidized operators from the operating subsidy and from the various tax advantages under the 1936 Act explained why the unsubsidized operators seek only the tax advantages. By securing the tax advantages, the unsubsidized operators will obtain 80 to 90 percent of all benefits accruing to the subsidized lines without assumption of any of the obligations of the subsidized lines.

"We Are Opposed"

We are opposed to the extension of the tax advantages to the unsubsidized lines for the following reasons:

1. It is our contention that where subsidies are needed, such subsidies should be granted in a direct and easily accountable manner. The Committee may well want to consider various forms of direct subsidization for all American vessels operating in the foreign trade. Indeed, we have long advocated serious consideration to a tramp shipping subsidy program to enable the maintenance of a sizeable American flag tramp fleet.

We are opposed, however, to subsidization through manipulation of the tax laws. We should remember the lesson learned under the Merchant Marine Act of 1928 with its concealed subsidy payments through the mail contracts. Indirect subsidization is not subjected to the proper safeguard for the public interest, does not find its way into the channels into which the law intended it to be directed and encourages speculation and maneuvering for profit rather than ship construction and ship operation.

The truth of the last clause is attested to by the provisions in the proposed bill extending the period in which Section 511 funds must be obligated from two years from the date of deposit to five years. Such a provision will promote hesitation and procrastination rather than ship construction and ship operation. We have long believed that the American merchant marine has suffered from the lack of aggressive leadership on the part of the shipowners. The position of the American merchant marine today would have been infinitely stronger had all of our shipowners acted with firm decision and dispatch in purchasing vessels under the Merchant Ship Sales Act, in restoring

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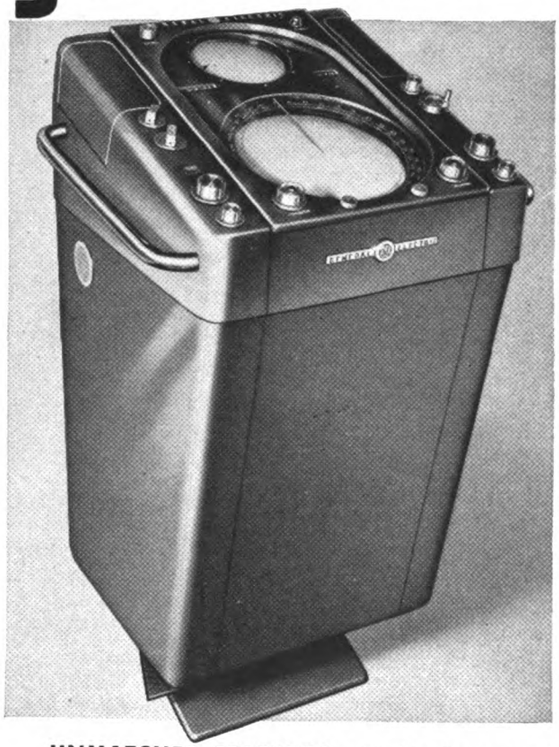
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WORKING SCOPE—This 12-inch picture illustrates short range piloting. Six ranges are available: ½*, 1, 3, 8, 20, 40-mile. In this actual picture, the working scope, adjusted for half-mile range, shows the shore lines of a narrow river plus a pair of buoys dead ahead at about ⅜ mile. Now look up at the safety scope again—notice the ship dead ahead, just beyond the buoys. The safety and working scope combination functions equally well in reverse for open water applications. Under these conditions the safety scope will give nearby information while the working scope is set for a longer range.

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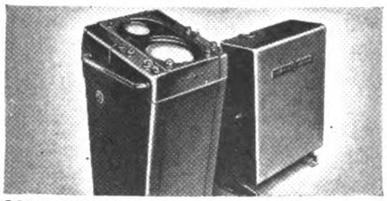
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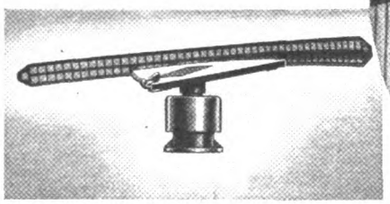


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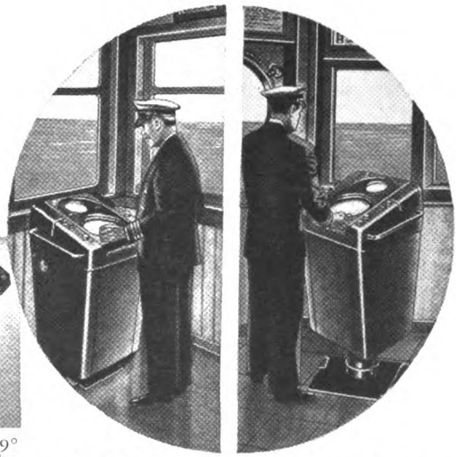
**Depending upon the vessel and its class of service, the safety scope range may be factory-set at 2, 3 or 4 miles.*



COMPACT—Rotatable feature of the console provides easy accessibility even when mounted in close quarters. Transmitter-receiver cabinet (right) is 33" high, 25" wide, and 12" deep. Can be mounted under a wheelhouse window without obstructing view.



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their old routes, and initiating new routes promptly after the war.

All Cream and No Milk

2. Extension of the tax advantage of the subsidized operator to the unsubsidized lines would give them the cream of the advantages of the 1936 Act with none of the obligations.

While the restrictions imposed on the subsidized lines may not be as strict as they would have us believe, they undoubtedly do exist. There is an obligation to maintain a certain trade route. There is an obligation to construct a specified number of vessels of types determined necessary for the trade by the Commission. There is a close check on the lines' financial books and a salary limitation. There is an obligation to pay minimum wages, to maintain minimum labor conditions, and to avoid foreign flag connections. Vessels built with a construction subsidy available to the Government in time of emergency at the depreciated book cost.

If the privilege of deferring taxes on earnings is accorded to the unsubsidized lines in the name of equality, there will be no equality of obligation and responsibility.

Oil, Steel, Coal and Taxes

3. The proposed extension of the tax advantage to the unsubsidized lines is discriminatory against other American businesses, since to our knowledge, no other industry has the right to deposit profits in tax-deferred reserve funds for the replacement of capital equipment, and since this right is available to the subsidized lines only because of the special obligations they have accepted.

Section 8 of the Committee Print would permit the deposit of earnings from other businesses owned by unsubsidized lines in the tax-deferred construction reserve fund. This means that an unsubsidized line could use the tax monies of its non-shipping subsidiaries to expand its shipping activities.

The oil companies could use taxes on their oil operations to build their tanker fleets. The steel companies could use taxes on their steel operations to build ore carriers. The coal companies could use taxes on their fuel sales to build collier fleets. And so on for the lumber companies, the sulphur companies, the sugar and molasses companies, etc. Waterman could use taxes on its shipbuilding, fishing, and other operations for ship acquisitions.

Since the non-shipping activities of the subsidized lines are strictly limited by law and regulation new inequities would be created by this section. There would be new demands from the subsidized lines for amendment to the 1936 Act, aiming at the elimination of such protective restrictions on other activities as are found in Sections 803 and 805, and thus, in the name of equality, there would be successive erosions of the proven provisions of the 1936 Act.

The provision that construction reserve funds could be retained for 5 years without being subject to taxation would promote procrastination rather than ship acquisition and in the absence of ship acquisition obligations such as the subsidized operators have would hinder the American merchant marine.

For these reasons we urge the Committee to reject the proposals contained in Sections 8 through 13 of the Committee Print. We also urge the Committee to investigate the workings of the capital and special reserve funds of the subsidized operators during the Congressional adjournment to determine the merits and deficiencies of this system.

Deferred Taxes are Not New

Deferred taxes on certain types of business transactions is not a new or untried policy. The Internal Revenue Code in Chapter 112 (f) permits this type of tax treatment in instances which are termed "involuntary conversions." The deferred tax provisions of Section 511 and the new tax deferred treatment of capital reserve deposits arrived at through compromise between the holders of certain subsidy contracts and the Treasury Department is merely an extension of this policy. In 112 (f) if a taxpayer has a given piece of property which is requisitioned by the government and for which he has paid "just compensation" the taxpayer is permitted to invest these funds in like property for similar usage without payment of tax on any profit which may result from the amount received exceeding the net book cost value of original property. He is, however, only allowed to enter the new piece of property upon his books for tax purposes at the net cost or book value of the property which has been requisitioned. This is exactly the procedure which is provided for in tax deferment for shipping. The objective is to have the larger amount available for capital investment and to defer the payment of tax over a period representing the life of the property, or at a point when the property is disposed of.

The sale of shares in a corporation is a capital gains transaction and subject to the examples we have given for capital gains above. It is to be assumed that the market value of such shares will properly evaluate any deferred tax liability, and will properly appraise the value of the assets behind the shares, so that the effect of deferred taxes will be reflected in the capital gains subject to tax.

Depletion Taxes

The Internal Revenue Code gives favorable tax treatment to oil, gas, mining and certain other natural resource industries by an additional provision authorizing a deduction as depletion (untaxable) of amounts ranging from five to 27½ percent of gross income. This favorable tax treatment has been a substantial stimulus to these industries. The tax provisions of the 1936 Act as interpreted are not as favorable to shipping. We suggest that American shipping, which is equally important to our economy and is more important to national defense than the other industries mentioned, should be given as generous tax treatment as is fair and consistent.

We understand the position of the Treasury Department to be in opposition to the depletion allowances which Congress has provided for certain natural resource industries. It is not surprising that they would also oppose tax provisions relating to shipping as now proposed. It is the duty of the Treasury Department to collect the maximum revenues within the framework of the laws enacted by Congress and it is to be expected that they will advocate policies designed to yield the greatest revenue. However, the matter of policy balance between tax revenues and the creation of proper economic conditions for basic American industries is a matter to be determined by the Congress.

Agricultural Taxes

While tax provisions applicable to agriculture do not include the principles now applied by law to oil, gas, mining and other natural resource industries, nor those which are now proposed for shipping, the governmental benefits given to agriculture take a different form. The price support program is of far greater magnitude and financial aid than anything suggested in the bill before the Committee. This is evidenced by the report of the Bureau of the Budget attached. Your Committee is also aware of the non-recourse loans made by the Commodity Credit Corporation up to 90 percent of the value of agricultural commodities.

In the following examples we assume the present tax rates and that the rate on profits regardless of its changing levels will remain above the level of taxes on capital gains.

If the money from a venture originates in capital gains and the venture is closed on the basis of profits, the venturer, *in so far as tax treatment is concerned*, loses the difference between the higher tax rate on profits and the lower one on capital gains. Conversely if the funds for a venture originate from profits and the venture is closed on the basis of capital gains, the venturer, from a tax point of veiw, gains the difference between the two rates. If the venture gains (or profits as the case may be) the tax difference washes out.

Accelerated Depreciation

The Committee Print would allow subsidized and unsubsidized operators to depreciate their vessels at a rate of 15% per annum. We are opposed to this provision for the following reasons:

1. This proposal is an indirect subsidy and is subjected to the objections common to such subsidies.

2. This proposal is discriminatory against other American business. Moreover it is economically unsound since it exerts inflationary pressures in periods of inflation.

3. This proposal is a gamble and may work to the serious disadvantage of the shipowner. Should the tax rate rise in future years, a shipowner who has utilized the larger depreciation allowances will find himself with a smaller depreciation base and subject to larger taxes.

4. Coupled with the other provisions of the Committee Print, accelerated depreciation can be used to the disadvantage of the Government and to the hindrance of the American merchant marine.

The shipowners overreach themselves when, on the one hand, they ask for the right to fully depreciate their ship in less than seven years, and on the other hand, they seek a twenty year depreciation base when evaluating the cost to the Govern-

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ment of a ship requisitioned in time of emergency. An example will illustrate the unfairness of this dual standard.

Buying the Same Ship Twice

Under Section 14 a shipowner can deduct as much as $150,000 per year on a $1,000,000 ship before calculating his taxes. In four years he can write this ship down to $400,000, largely out of taxes. But if war should break out and the Government acquired the vessel under the terms of the 1936 Act, lines 13 through 17 on Page 14 would require the Government to pay for the ship on the basis of a twenty year life. Thus only $50,000 depreciation would be deducted for each year and the Government would have to pay $800,000 for the vessel. In effect the Government would pay twice for the same vessel.

The witnesses for the industry "innocently" testified that they made no change in the provisions of Section 802 of the 1936 Act. They made no change because that is how they would reap double benefits. That they knew of this fact is demonstrated by the fact that they added the subsection found in lines 13 through 17, Page 14 which states that depreciation on a vessel acquired by the Government under Section 802 of the 1936 Act shall be on a twenty year life "notwithstanding the foregoing" (the foregoing being the provision for accelerated depreciation).

Taking the provisions of the Committee Print relating to trade-ins and to accelerated depreciation together we can see the reason the shipowners propose amendment of Section 510 rather than of Section 507 of the 1936 Act. With accelerated depreciation, the shipowners hope to write off their ship in less than ten years. Section 507, with its provision for payment of the depreciated book value, would be useless under these circumstances. Hence, the shipowners hoped to reduce the Section 510 age minimum to 12 years and to get a good trade-in allowance on the basis of market value as proposed in that section. Here again the Government would be paying twice for the same ship.

Financial Manipulation and Tax Evasion

Accelerated depreciation would promote financial manipulation and divert attention from ship operation to tax evasion as the means of making money. What would happen if a shipowner decided to withdraw his monies in some subsequent year rather than acquire new ships? Would the fact that 15% per annum had been earmarked as depreciation allow him to escape taxation altogether on these large sums despite the fact that the only argument made for the larger depreciation is that it will promote ship acquisition?

We urge the Committee to reject accelerated depreciation as economically unsound, discriminatory, risky for the industry, and subject to perversion.

We would have no objection to a provision allowing the unsubsidized operators the right to increase any year's depreciation in order to recover lost depreciation in previous years because of the failure to earn such depreciation. Our thought is that the unsubsidized shipowner ought to be allowed to keep abreast with the physical depreciation of his ship and to acquire adequate replacement funds. To accomplish this end, an unsubsidized shipowner should be allowed to make up lost depreciation.

Accelerated Depreciation

Under the present law the owner of a vessel operating under a subsidy contract is required to depreciate his vessel at the uniform rate of 5 percent per annum. The owners of unsubsidized vessels and other floating property are permitted by the Internal Revenue Department to depreciate such vessels at a rate estimated to amortize the investment within the useful life of the property.

The proposal contained in H.R. 5346 would alter this condition by permitting the vessel owner to take any amount of depreciation from zero up to 5 percent per annum in order to amortize the vessel investment during periods when earnings are available and to charge such deduction against earnings for tax purposes.

This provision of accelerated and flexible depreciation is designed to permit capital investment to be geared to cycles of fluctuating earnings. Some such arrangement is permitted to its shipping by every foreign maritime country. Sweden permits "free" depreciation, i.e. the owner must pay off any amount in any given year until he has extinguished the capital investment. Great Britain now permits the writing off of 40 percent in the first year upon the theory that vessel investments today represent inflated prices. The net effect of such treatment of depreciation of vessel property by foreign countries is more liberal than what is proposed in the provisions of H.R. 5346.

Under the arrangement of accelerated or flexible depreciation the government loses no taxes. It is only a question of when these are to be paid. Not more than 15 percent may be written off of the capital investment in any one year and, of course, when the investment is exhausted no further depreciation can be taken.

Basic Principles

The basic principle of accelerated and flexible depreciation is two-fold.

A. The flexible characteristic permits the charge of a depreciation allowance which will actually amortize the total capital investment. Under the present law during a year when there are no profits the shipowner is still required to make a depreciation deduction and under these conditions he never receives his full return of capital deduction for tax purposes. As it is academic that no profit is made until invested capital is returned, in such instances profits are reported and taxes paid thereon which do not take into account full return of the invested capital.

B. The shipping industry is noted for its cycles of reasonable prosperity and depression. The former are usually connected with disturbed world conditions or circumstances of war. There is not a uniform earning record and shipping properties do not easily attract investment capital. Under these circumstances it is desirable, as has been found the case by the more experienced maritime nations, to permit the writing down of shipping properties when the opportunity is available. As has been explained, the ultimate effect on taxes is negligible.

The Maritime Commission says there are "many difficulties in the application of accelerated depreciation." It talks about the departure from uniform accounting practices and the book value of property for rate making purposes. It is well known to every person experienced in accounting matters that the books of a corporation are not necessarily identical with their tax returns. We would be surprised if the exception is not greater than the rule. To advance such reasons would make it appear that the formulation of objections are difficult. It must be apparent to any businessman that if he can extinguish his debts he is in a stronger position to weather any financial or depression storms in the future. The fact that he would have little or no deduction from earnings in later years due to the acceleration of amortization would not be detrimental to his competitive ability in lean years when profits are meager. Rather through the process of the return of capital he would be in the possession of funds to help weather such condition.

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New York Ship—Fifty Years of Achievement

(Continued from Page 24)

ing 1940 the yard was awarded contracts for nineteen cruisers, including six 30,000-ton battle cruisers of the ALASKA class, although three of the latter were later cancelled. Because of the desperate need for these ships the yard's facilities were expanded to rush delivery dates. Twenty-three more cruisers were ordered from 1941 to 1943 of which, following V-J Day, thirteen were cancelled, two scrapped on the ways, one delivered immediately after launching. Two additional carriers, the SAIPAN and the WRIGHT, were also delivered after completion.

The achievements of the yard's technical staffs were equally as outstanding as its construction records during the war. This staff developed complete detail designs and working plans for seven classes of major combatant ships of 12,000 or more displacement tons, together with the detail design of machinery for eighth class. Twenty-nine of the vessels built to these plans were completed by New York Ship, while fifty-six more were built in six other private and naval shipyards from duplicate plans supplied by the company. In addition to these major type ships, detail design plans were prepared and 148 Landing Craft of two classes were built. Duplicate plans were supplied to numerous small yards for mass production of these craft.

Nearly half a century after the Navy, with nervous misgivings, awarded its first contract to New York Shipbuilding Corporation, it awarded another pioneering contract. Late this summer the keel will be laid for a new type cruiser to be used in anti-submarine warfare, and a sister ship will be built by another yard from New York Ship's plans.

As the company noted in a book which it published celebrating its Fiftieth Anniversary, "fifty years is not a long time in the annals of men or events." However, fifty years of achievement such as the company's impressive record establishes, are something to be proud of. But to the present officials of the company, this is really only the beginning, for they are looking ahead to the next half-century.

For further information, watch for The LOG in August, 1999!

CIO vs. NFAS

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LET'S USE PLASTIC SURGERY ON

SHIP'S DOCUMENTS

Paper is sinking our merchant fleet. Let's toss it overboard and make more room for paying cargo.

By LIEUT. COMMANDER H. F. CROUCH
United States Coast Guard

This is an era of complexity interlaced with earnest desires for simplicity. In the ever-mounting reams of laws and regulations, simplicity, while not forgotten, becomes increasingly more difficult to achieve. The end result is that everyone is caught in a hopeless maze of more and more rules, more and more directives, and more and more documents. This plight of modern life is no better illustrated than in the American Merchant Marine.

The regulation—and the consequent documentation—of the maritime industry dates back to the early history of our nation. For one reason or another, chiefly to govern abuses and excesses in maritime practices, regulations have been added to regulations in a top-heavy cumulative process which makes revamping of obsolete underpinnings a delicate task endangering the entire superstructure. Instead of attempting to modernize the thousands of shipping laws en masse, as has been attempted on occasions for more than twenty years without success, it would seem better to engage first in a *face-lifting* process of merchant ship documents. Then the revisionary work on the statutes, which many will admit is vitally needed, could be done behind the scenes in a slow and evolutionary manner. By so doing, there would be no radical disturbance of the legal retinue of interpretations and procedures that have been built upon these regulations down through the years.

For every group or family of regulations pertaining to a merchant vessel (regulations pertaining to persons and cargo are not under discussion here), there exists a document or certificate to attest the degree of compliance with applicable section. Without such documents, no ship can engage in commerce for which she is intended. Today, the number of documents needed exceeds 25. They are of varying sizes, thicknesses, and formats. In some cases, titles are misleading, information is duplicated, designs are elaborate, and contents are of unnecessary detail. When it is considered that all are issued by only *five* different agencies, appropriate correlation and consolidation seems almost inexcusable.

Take Your Pick

Since documents are issued to the ship, the Master, of course, is responsible for their file keeping. This is an irksome chore as he lacks unified instructions regarding appropriate disposition (some have to be posted, some do not) not only of the documents themselves but of the applications, the temporary and provisional forms, and related correspondence. This miscellaneous material, once its purpose has been served, could readily be discarded without jeopardizing the value of the regular certificates and certainly would avoid confusion with them. If only all documents were of standard size, they would at least be susceptible to neat and orderly filing. When a representative of an issuing agency comes aboard he generally asks to see some of the "ship's papers." Obligingly, the Master may point to one or more much-handled envelopes, folders, or other containers with the bewildering glance of "Take your pick!"

While rummaging through, the small ones may fall to the floor, the large ones may become soiled, and the one which is sought may be back-side to or shuffled among those already scanned. No wonder some information inadvertently fell into enemy hands during merchant ship sinking and capture in the past war! The scramble to determine which was valuable and which was not, for emergent disposal over the side, reflected adversely on peacetime procedures. A "paper-heavy" merchant vessel can be as much a detriment to war as it can be to peacetime commerce. Why can't the conglomeration of documentary material be reduced in number, stripped of non-essential details, and standardized in size for inclusion in one book with prefaced instructions for all?

Use the Administrative Scissors

It is believed that the present number

1. Master Carpenter's Certificate	U. S. Bureau of Customs
2. Award of Official Number	
3. Certificate of Ownership	
4. Certificate of Admeasurement	
5. Certificate of Registry (Enrollment & License—if engaged in domestic trade)	
6. Panama Canal Tonnage Certificate	
7. Suez Canal Tonnage Certificate	
8. Certificate of Classification—Hull	American Bureau of Shipping
9. Certificate of Classification—Machinery	
10. Equipment Certificate for Anchors	
11. Equipment Certificate for Boilers	
12. Equipment Certificate for Tailshaft	
13. Equipment Certificate for Wire Rope	
14. Seaworthy Certificate	
15. International Load Line Certificate (also Load Line Certificate for Coastwise Waters and the Great Lakes)	
16. Certificate to Carry Oil in Bulk	
17. Certificate of Ratproof Construction	U. S. Public Health Service
18. Deratization (or Exemption) Certificate	
19. Drinking Water Certificate	
20. Vessel Sanitation, Record of Inspection	
21. Certificate of Inspection	U. S. Coast Guard
22. International Safety Certificate (Int. Safety Radiotelegraphy Certificate—if a freight vessel)	
23. Vessel Inspection Record	
24. Ship Radio Station License (Radio Telephone on Great Lakes)	Federal Communications Commission
25. Ship Radio Station Equipment	
26. Record of Inspections	
27. Radar Station License	

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of merchant ship documents can be, and logically should be, reduced to less than one third—to 8, in fact—and still serve the basic purposes intended. Moreover, much of this can be done without lengthy and uncertain legislative enactment as it lies within the administrative purview of each agency concerned. Cooperation between agencies needs no legislative enactment.

The following documents are currently required on oceangoing vessels of the United States: (See foregoing table.)

And in time of war, there are additional certificates, such as, Degaussing, Delivery, and others necessary to clear National Defense authorities.

We Can Do Without the Filigree

A certificate, by definition, is intended to convey certain facts or information. While in some cases, supporting information is helpful, it is not necessary to include many superfluous items, unimportant details, filigree, or spaces which are left blank 90% of the time. Grandiose lettering and wording, or statutes and regulations in small print, are seldom read by boarding officials who require only the essential facts which the documents possess. Two different certificates of almost identical form are hardly necessary to convey two different facts. The Panama Canal and Suez Canal Tonnage Certificates, for example, each itemize practically every computation on similar forms for arriving at the gross and net tonnages of a vessel under each set of rules. The Certificates of Classification for Hull and Machinery are much alike on their face sides except for the words "Hull" and "Machinery" and the classifying symbols.

There is little need for two separate documents, such as the Certificate of Inspection and Vessel Inspection Record, when the latter consists of indorsements which could just as effectively be placed on the former. One document authenticated by two different organizations, as is the Load Line Certificate, naturally appears out of line when issued by private technical society for a fee and enforced by a public agency. Titles which are archaic hardly should be perpetuated for professional nostalgia. Reference is still made to a Master *Carpenter's* Certificate. The hammer, saw, and adz, long ago lost their preponderance in the building of ships.

The Face-Lifting

It is not intended here to go into a detailed analysis of each existing certificate, but rather to make specific suggestions for revisions and consolidations in such a way as *to call attention* to the constructive need for documentary face-lifting. These suggestions are made knowing full well that many of them will be considered "impractical" under existing procedures. Yet, if we are to simplify merchant ship documents and reduce them in number, some revisions are inevitable. On the other hand, the fact that the same agency issues several certificates is no reason by itself that all of them should be consolidated into one. This is best illustrated by those issued by the Bureau of Customs. It is doubtful that they can be reduced below three.



"NOW LET'S SEE . . . where is that Certified Document with Indorsement?"

Legalized Perjury?

The birth certificate of a vessel is its Master Carpenter's Certificate, but why not call it by its proper name—"Builder's Certificate?" Under oath the shipbuilder fills in the blanks that he is a carpenter (legalized perjury?) and that the vessel was built at a certain place and date with certain dimensional characteristics and propelling machinery. This document stays with the vessel throughout its life, regardless of change of ownership. The same is true of the Official Number and could be included in the "Builder's Certificate" without separate certification. Gross and net tonnages could be omitted from the birth certificate, as this is a matter of Government admeasurement and is subject to change with subsequent structural alterations. If desired, the displacement tonnage could be substituted.

Since there must be some document for tonnage taxation and fee purposes, the Certificate of Admeasurement is a logical one. It could be considerably abbreviated to permit incorporation of the Panama Canal and Suez Canal tonnages in a comparative gross and net tonnage arrangement. These figures differ for the same vessel. For example, a T2-type tanker might have the following tonnages: United States 10,245 gross, 6115 net; Panama Canal 10,920 gross, 7700 net; Suez Canal 10,945 gross, 8300 net. This is really the essential information; much of the computable detail regarding space capacities, deductions, exemptions, and so on, could be eliminated from the certificate and kept on file at the Customs office ashore. This is feasible as usually the same admeasurer makes all three sets of calculations. After all, it is not intended that a vessel be remeasured by every doubting boarding official and if it were, so long as the rules hadn't changed, the variation would only be in the neighborhood of one-quarter of one percent.

Consolidation

Ownership of property must be documented by a title identifying the owner and listing any liens or mortgages on his property. This is the function of the Certificate of Registry (or Enrollment and License), which changes whenever a vessel is transferred from one owner to another. Because of this, no separated Certificate of Ownership is absolutely necessary. The Registry also identifies the Master and the home port of the vessel. Half of this certificate contains blanks identical with the Certificate of Admeasurement. This portion of the Registry could be omitted and substituted with the blanks for "Indorsements for change of Masters" and dates "Inspection certificate expires," now found on its reverse side. Wherever possible, all pertinent information, especially signatures, should appear on the face side of a certificate, and if desired, supporting particulars on the back.

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For insurance purposes, there should be just *one* Certificate of Classification—for "Hull, Machinery, and Equipment." All script printing repeating identical information, such as, length, tonnages, etc., found on the Certificate of Admeasurement, could be entered in a block-like arrangement requiring only one-fourth the space now utilized. This saving of space, plus that made available by the omission of superfluous words, would permit inclusion on the face side of indorsements for periodic and special surveys necessary to maintain seaworthiness in class. On the reverse side, the particulars of freeboard, cargo (bulk oil), machinery and other equipment could be appropriately briefed.

Inasmuch as Load Line markings are a safety of life at sea matter and enforced as such, functionally they should be included in the Certificate of Inspection as a new "Certificate of Safety." The markings on this Certificate, however, should pertain only to Coastwise and Intercoastal Waters and the Great Lakes, thus leaving the International Load Line for inclusion on the International Safety Certificate, as national and international requirements should be kept separate. Indorsements on the present Load Line Certificates could be superimposed on the "Certificate of Classification" as mentioned above.

Certificate of Safety

A document should be descriptive of its function and for this reason a "Certificate of Safety" appears more appropriate than does the Certificate of Inspection, especially since there are several kinds of official inspections. This would be in accord with nomenclature on the International Safety Certificate. Instead of certifying the place and date a vessel was built, official number, tonnages etc., which is attested by other documents, such information could be boxed-in for brevity. At the same time, the "particulars of inspection" now on the face side of the Certificate of Inspection could be relocated on the back to allow room for load line markings and indorsements from the Vessel Inspection Record. This latter record is an account of all examinations and drills held during the valid life of the Inspection Certificate. If there were no significant operational changes for the vessel regarding its route, equipment, crew, etc., the same "Certificate of Safety" could be indorsed annually, say up to five years, and thus minimize the correspondence and handling necessary for renewing such certificates.

More than any other single document, the International Safety (or Radio telegraphy) Certificate exemplifies the target as to size, simplicity, and format for other documents. It is of modest quality paper and will fit any standard typewriter. Revisions of this certificate have been contemplated by the 1948 Safety of Life at Sea Convention and will be put into effect if the Convention is ratified by enough signatory nations by 1951. Thus, it would seem that there is time for inclusion of appropriate load lines before new forms are printed. One interesting feature about International Safety Conventions is that whenever a new Convention is adopted, it abrogates the previous one and its rules, instead of just adding on more rules as is often done nationally.

Certificate of Health

Closely associated with safety is health. There should be a vessel's "Certificate of Health" much in the same sense as an individual would be medically certified. In addition to certifying statements as to Ratproof Construction, Deratization, Drinking Water and Sanitation, there should be some entry for hospital accommodations, and ship's medicine chest. While there is a nebulous area of these items implied in the Certificate of Inspection, the differentiation should be clearly drawn and properly designated as a "Certificate of Health."

Radio and Radar are a media of communications, and as such, could be incorporated into a "Certificate of Communications." This, too, is related to safety, but nevertheless is a separate function. It should be quite feasible to combine the present four documents into one. About one-third of the Radio Station License contains sections of statutes and regulations in small print. These could be eliminated. The tabulation of authorized frequencies could be rearranged. Half of the information on the Radio Station Equipment document is identical with that on the Radio Station License. The equipment could be listed on the back as indicated for other documents. Indorsements from the Record of Inspections could be on the face side of the "Certificate of Communications." If a vessel had no radar, that portion of the new document could be left blank though many merchant vessels do have radar today. The requirement that each of the radio and radar licenses be posted near its equipment can be liberally construed to mean "in the vicinity," since on a merchant vessel the radio room and radar are seldom more than a short distance from each other.

War Documents

In time of war, additional documents can be anticipated, though it's anybody's guess as to what they would be. However, it seems logical that they all could be consolidated into one "Certificate of Defense." In this way, there would be a minimum of official documents necessary on a merchant ship.

To recapitulate the foregoing paragraphs it is conceivable that the number of existing certificates could be reduced to eight—nine, in time of war. Accordingly, they would be:

1. Builder's Certificate	U. S. Bureau of Customs
2. Certificate of Admeasurement	U. S. Bureau of Customs
3. Certificate of Registry	U. S. Bureau of Customs
4. Certificate of Classification	American Bureau of Shipping
5. Certificate of Safety	U. S. Coast Guard
6. International Safety Certificate	U. S. Coast Guard
7. Certificate of Health	U. S. Public Health Service
8. Certificate of Communications	Federal Communications Commission

Lest the impression be gained that existing documents are "all wrong," it should be emphasized that they are not. From the point of view of any one certificate, each serves its own purpose well. However, from a composite viewpoint, which is that seen aboard ship, it appears that they could be fewer in number and more uniform in appearance. It has been the endeavor herein to merely suggest one way how this could be done. There are other ways, of course.

The whole concept of face-lifting merchant ship documents is somewhat analogous to a man who gets a haircut and a shave, and puts on a clean shirt—one that fits. He does this without consultation with the boss. He's still the same man, he works in the same office, and he has the same problems. But he is able to tackle those problems with renewed vigor. Temporarily, at least, his morale gets an upward boost. His previously unsuccessful efforts take on a "new look," and he, thereby, is quite apt to make progress toward a preconceived objective. Likewise with merchant vessel certificates. Many of the revisions could be undertaken without special legislative (Congressional) authority as the purpose of existing statutes would be unaffected except perhaps, for some nomenclature. Once completed, there might be an incentive for again trying to modernize the navigation laws for the benefit of the American Merchant Marine and every segment of the maritime industry.

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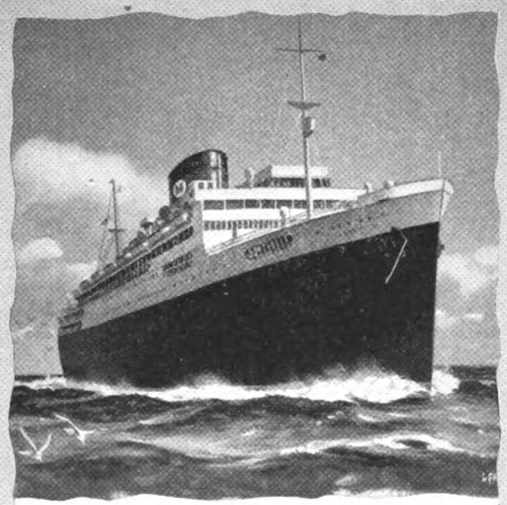
APL Returns Over Six Million Dollars to USMC

(Continued from Page 19)

"(2) that approximately 50% of all steamship operating subsidies eventually find their way back into the U. S. Treasury, through refund or recapture.

"The Bureau of the Budget on May 16, 1949, shows that for the fiscal years 1934 through 1948, U. S. federal subsidies to business and farmers totaled in excess of fourteen and a half billion dollars ($14,525,217,000). Of this huge amount only forty-nine million, or 3/10 of 1 per cent was paid out by the U. S. Maritime Commission in operating shipping subsidies. Half of this relatively small amount was subsequently recaptured, leaving the net ship operation subsidy only $24,127,000, or 17/100 of 1 per cent of the total."

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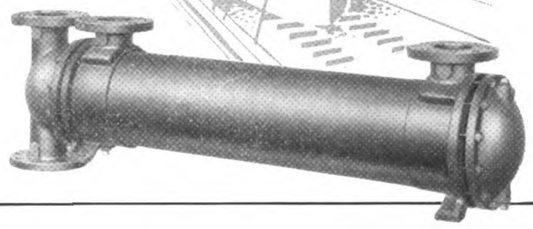
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OPERATION AND MAINTENANCE OF STEAM TURBINES AND GEARS

A complete program of preventive or planned maintenance inspection for main and auxiliary turbines, main reduction gears and auxiliary set reduction gears.

By R. J. BROWN
Assistant Turbine Engineer
General Electric Company*

Part I appeared in the July issue of The LOG.

PART II

Maintenance in General

Good operation of the turbine and gear cannot entirely by itself assure non-outage and continued efficient performance as some wearing and corrosion of parts will take place with time. Also other parts of the power plant as boilers, condensers, pumps, valves, and the like upon which the turbine and gear are dependent for operation may suffer damage or faulty operation and thus affect the turbine and gear itself. For these reasons maintenance of the turbine and gear is necessary.

As previously indicated, maintenance can be of a planned or of a casualty type. A neglecting of the former may likely result in the latter and in doing so be much the more costly. For this reason, planned maintenance is pretty well recognized as a good economic practice.

Casualty Maintenance

Casualty breakdown usually requires no particular decision as to making or not making repair. If it prevents operation, maintenance must be immediate; if it affects performance, maintenance must be at the earliest opportunity. The need for maintenance is usually noted by some unusual noise, vibration, or temperature rise in the unit, or the sticking of a moving part.

As noted above if a casualty has occurred to other parts of the power plant upon which the turbine and gear are dependent then at the same time consideration to the effect on the latter must be given. Thus, if a boiler should become salted and prime, quite possibly the turbine throttle and governing valves may become stuck in the stem packing and the nozzles and buckets may be coated with deposits. Certainly the sticking of the throttle or governing valve must be considered as a casualty to the turbine and require immediate repairs and the removal of the deposits from the turbine buckets and nozzles should be done at the first opportunity to return the unit to efficient performance.

Preventive or Planned Maintenance

Planned maintenance simply means the periodic inspection and checking of the apparatus and fixing up of any discrepancies found at the time. It should always be kept in mind that basically planned maintenance is for the benefit of operation in a future interval of time and not for what has already occurred in the past interim of time. However, in considering planned maintenance it is always good policy to review the Engine Room Log before determining the extent of the inspection to be made.

Interim of inspection is, of course, difficult to predicate as operation is the dependent variable. However, assuming normal good operation having taken place and all casualty type maintenance having been taken care of the following general recommendations for planned maintenance are made, together with a recommended maximum interim for its performance. This program of planned maintenance is based on both design judgment and on practical experience of recommending and supervising maintenance of numerous units operated under varied conditions.

Program of Preventive or Planned Maintenance Inspection

MAIN & AUXILIARY TURBINES

Each Four Years Maximum

(1) Open Turbine Casing

(a) Inspect for corrosion, erosion, and fouling of internal parts, soundness of parts, and wear of packings and packing fits. Clean all steam path parts, stationary and rotating, of compound and rust. Renew or repair parts as necessary.

(b) Check and record all important clearances and compare to design values and tolerances.

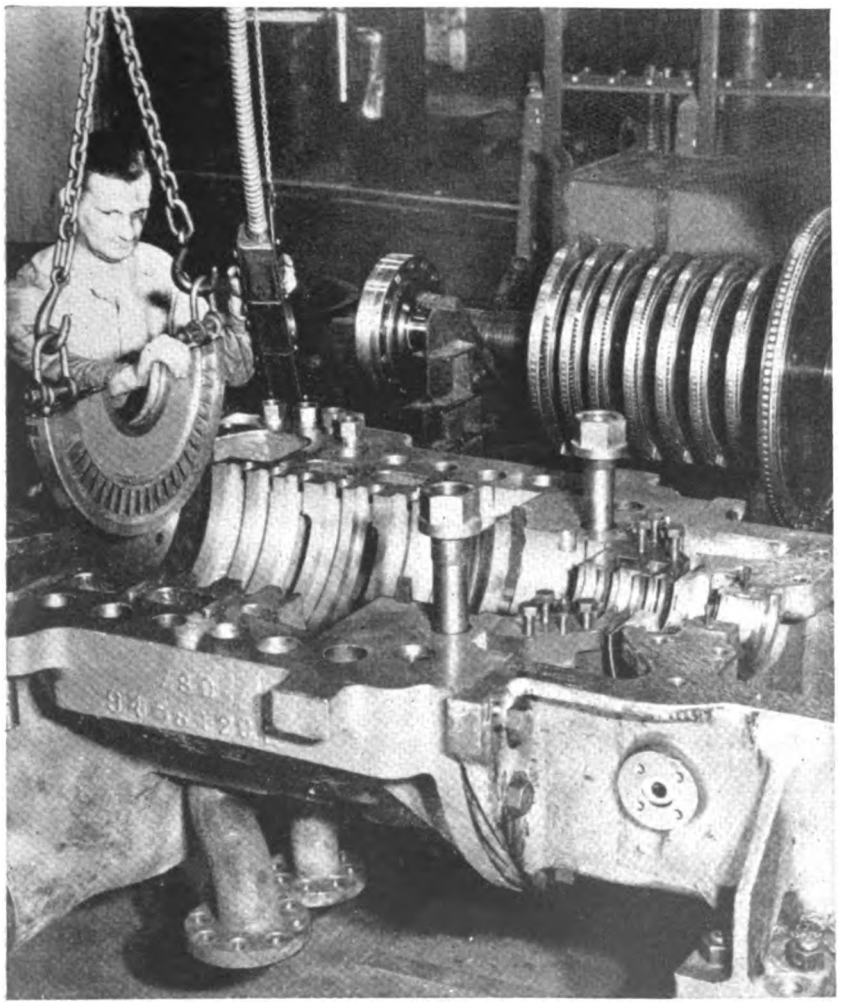
For an impulse design turbine these are classified as follows:

(1) Wheel to nozzle and diaphragm clearances at bucket shroud band.

(2) Average inter-stage and end labyrinth packing radial clearances.

(3) Inter-stage and end labyrinth packing axial clearances if of high-low tooth design.

For (1) and (3) if clearances are outside tolerances and exist through all stages make adjustments to rotor location; if in any particular stage check diaphragm and then relocate diaphragm or packing as required.



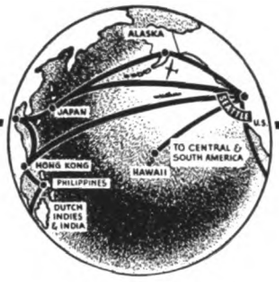
HIGH-PRESSURE and temperature turbines under construction for new high-speed tankers at General Electric's Lynn (Mass.) River Works . . . An interstage diaphragm being lowered into position in the lower half of the turbine casing.

Small as they are, these high-pressure turbines generate 6,250-hp apiece when installed in the hull of a supertanker. Operating at 835 psig at 840F, these units, when coupled with a low-pressure turbine and geared to a propeller, will drive the new tankers at a 16-knot cruising speed.

This unit is similar to those to be built by General Electric for three luxury liners for the American President Lines.

* *Presented at the May 31, 1949 meeting Northern California Section, Society of Naval Architects and Marine Engineers.*

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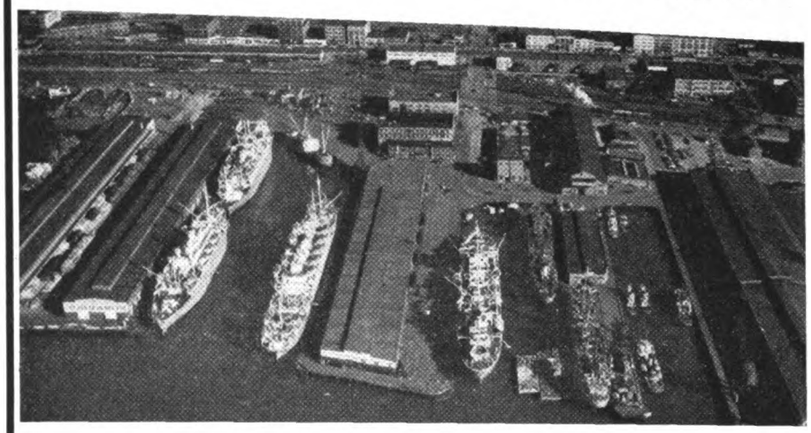
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For (2) if clearances are outside tolerances replace with new packing or remachine old packing to restore design clearance. If any one packing is worn appreciably more than others then the central location of its diaphragm should be checked. (If packings are all worn on the bottom only it probably means that a bearing went down at some time; if worn all around or at opposite bores, then excessive vibration has probably occurred at some time due perhaps to improper starting.)

(2) Open Control Valve Chest Assembly

(a) Grind in or renew valves and seats as required using dummy discs with guides when grinding valve seats.

(b) On Generator sets check and set valve lifts so that proper paralleling will continue.

(c) Check valve stems for alignment and condition. Renew stem packings.

(3) Open Maneuvering Valve Assembly On Propulsion Sets And Throttle Trip Valve On Auxiliary Sets.

(a) Grind in valves and seats as required using dummy discs with guides when grinding valve seats.

(b) Check valve stems for alignment and condition. Renew stem packings.

(4) Open And Clean Up All Speed Governing Mechanisms.

(5) Open And Check Extraction Non-Return And Shutoff Valves And Operating Mechanism.

(a) Grind in valves and seats as required.

Each Two Years Maximum

(1) Open And Inspect Journal Bearings And Thrust Bearings.

(a) Measure bearing clearances and replace any bearings which have excessive clearance or wiped babbitt.

(b) Stone journals if scored slightly. If journals are badly scored, machine journals undersize or build up with metal spray in a satisfactory manner and remachine to original size. (This latter may be recommended for units which are in duplicate in order to avoid the carrying of various size spare bearings.) If journals are remachined or built up and remachined it is advisable to check balance the rotor.

Each One Year Maximum

(1) Open Carbon Packing Boxes

(a) Inspect packings, shaft lands, and packing box seal faces.

(b) Clean up shaft lands and boxes as required.

If shaft lands show to be badly scored or pitted then it is advisable to build up with Monel or stainless steel in a satisfactory manner and remachine to standard size or in some instances assemble a packing sleeve or turn packing lands undersize. (This latter requires special bore packing.)

(c) Check packing clearances and condition of packing. Refit to design clearance or install new packing as required.

On modern marine turbines with high temperature superheated steam carbon packing must always have radial clearances not less than that specified by the manufacturer.

(2) Open Low Pressure Turbine Inspection Cover.

(a) Inspect last stage buckets and exhaust casing for signs of water erosion.

(b) Check that moisture removal orifices are open.

MAIN REDUCTION GEARS

Each Eight Years Maximum*

(1) Inspect Journals and Bearings of HP and LP Side High Speed Gears, HP and LP Side Low Speed Pinions, and Low Speed Gear.

(a) Measure bearing clearances and bearing crown thicknesses or bridge gauge dimensions.

(b) Replace any bearings which have excessive clearance or wiped babbitt. (In order to maintain 100% tooth contact the forward and after bearings of each individual gear and pinion rotor must have basically the same crown thicknesses.)

Each Four Years Maximum

(1) Inspect Low Speed Gear Thrust Bearing and Runner

(a) Measure thrust bearing clearance and reset if required.

(b) Clean up bearing and runner as required.

(2) Check Alignment of High Speed Pinions to HP and LP Turbines.

(3) Clean Out Main Oil Sump.

Each Two Years Maximum

(1) Inspect HP and LP High Speed Pinion Bearing and Journals.

(a) Measure bearing clearances and crown thicknesses or bridge gauge dimensions.

(Continued on Page 50)

**The maximum interim here given is based on the assumption that on all previous examinations of the gear teeth the contact line showed no misalignment to have taken place, that inspections of the high speed pinion bearings indicate no failure of oil supply to have ever taken place and that the oil had been clean of grit and kept up to specifications.*

SS _____

MAIN REDUCTION GEAR #_____

BEARING MEASUREMENTS AND CLEARANCES	HP Side Fwd.	HP Side Aft	LP Side Fwd.	LP Side Aft
HS Pinion Bearing Bore				
HS Pinion Journal Diameter				
HS Pinion Bearing Clearance				
HS Pinion Bearing Bridge Gage (meas.)				
HS Pinion Bearing Bridge Gage (stamped)				
HS Pinion Bearing Crown Thickness (top)				
HS Pinion Bearing Crown Thickness (bottom)				
HS Gear Bearing Bore				
HS Gear Journal Diameter				
HS Gear Bearing Clearance				
HS Gear Bearing Bridge Gage Reading (meas.)				
HS Gear Bearing Bridge Gage Reading (stamped)				
HS Gear Bearing Crown Thickness (top)				
HS Gear Bearing Crown Thickness (bottom)				
LS Pinion Bearing Bore				
LS Pinion Journal Diameter				
LS Pinion Bearing Clearance				
LS Pinion Bearing Bridge Gage Reading (meas.)				
LS Pinion Bearing Bridge Gage Reading (stamped)				
LS Pinion Bearing Crown Thickness (top)				
LS Pinion Bearing Crown Thickness (bottom)				

	Fwd. End	Aft End
LS Gear Bearing Clearance		
LS Gear Bearing Bridge Gage Reading (meas.)		
LS Gear Bearing Bridge Gage Reading (stamped)		
LS Gear Bearing Crown Thickness (top)		
LS Gear Bearing Crown Thickness (bottom)		

HP HS Gear Thrust Bearing Clearance	
LP HS Gear Thrust Bearing Clearance	
LS Gear Thrust Bearing Clearance	

ALIGNMENT	Fwd. Helix	Aft Helix
HP HS Pinion Apparent Tooth Contact	_____%	_____%
LP HS Pinion Apparent Tooth Contact	_____%	_____%
HP LS Pinion Apparent Tooth Contact	_____%	_____%
LP LS Pinion Apparent Tooth Contact	_____%	_____%

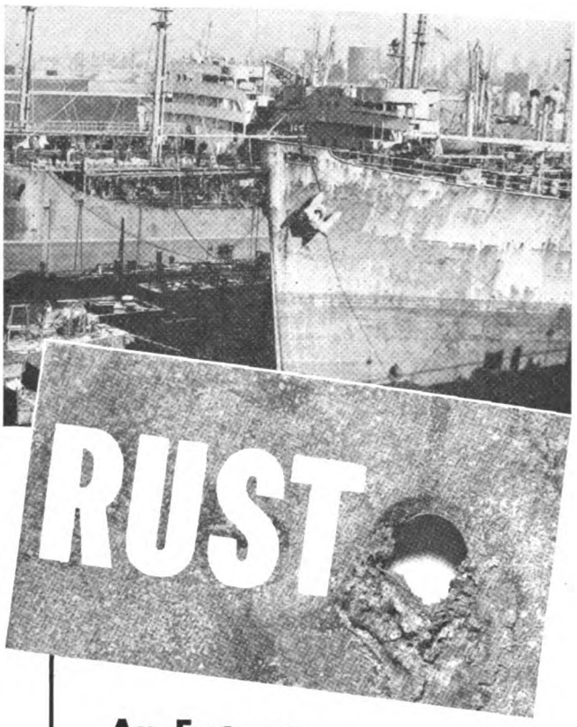
COUPLING CLEARANCES	Total Float	Tooth Clearance
HP LS Coupling		_____(fwd) _____(aft)
LP HS Coupling		_____(fwd) _____(aft)
HP LS Coupling		
LP LS Coupling		

Supervisor_____

Date_____ Place_____

(Fig. 2c)

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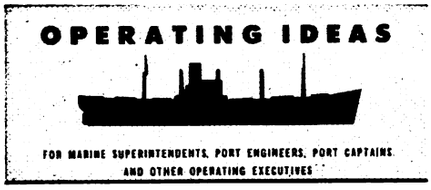
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PROPELLER CHARACTERISTICS THEIR EFFECT ON PERFORMANCE

Problems involved in designing a propeller for a particular ship.



PART II

By E. V. LEWIS
Naval Architect
George G. Sharp

Last month's article discussed some of the basic factors of propeller design and the relationship between the fundamental characteristics. Some other practical aspects of propeller design will be dealt with in the present article.

Type of Propelling Machinery

It is well known that the best RPM for a screw propeller falls within the speed range of the reciprocating steam engine and the heavy, slow speed Diesel. On the other hand, high speed prime movers such as turbines and light Diesels require some method of speed reduction to bring the shaft RPM low enough for efficient propeller performance.

There are other differences between machinery types to be considered. Reciprocating engines, either steam or Diesel, are essentially constant torque machines under varying load. That is, with full steam or fuel supplied, an increased load due to heavy weather, fouling or deeper draft will cause a reduction in RPM, but torque on the shaft will remain essentially unchanged. Since SHP is a function of the product torque x RPM, the SHP will accordingly be reduced. With turbine machinery or electric drive, on the other hand, increased load and reduced RPM will generally not change SHP appreciably. Consequently the torque must increase.

The machinery differences discussed above have several interesting consequences. First, the SHP available in heavy weather with the same supply of steam (or fuel) is less with a reciprocating engine than with a turbine. Second, the possibility of increased torque in the case of the turbine or electric motor has resulted in higher requirements of the classification society for strength of shafting and propeller blades.

A further consequence of the difference in machinery characteristics is the effect on propeller design of a permanent increase in a ship's resistance. This may result from an increase in designed load draft, as a result of sheer strake strapping for example or from the gradual increase in bottom roughness with age. With reciprocating machinery the RPM's will be reduced as the load on the propeller becomes greater, although the torque will tend to remain constant as explained above. Hence, the SHP developed will be less and the problem is either to modify the engine so as to develop full power at the reduced RPM or to redesign the propeller so as to increase the RPM's and thus develop full power. As can be seen from the data presented last month, the RPM can be increased by reducing the diameter or the pitch of the propeller.

With a geared turbine or electric drive ship, SHP will not change appreciably as resistance is increased. However, in developing full SHP at reduced RPM's the torque will be increased, and therefore it is desirable to modify the propeller so as to raise the RPM's and thus avoid overloading shafting and gears. As before this can be accomplished by reducing diameter or pitch. This explains why the blade tips have sometimes been cut off of existing propellers. However, a new propeller designed for the new conditions should give better results than this crude solution.

Vibration

The problem of minimizing harmful or objectionable vibration introduces a number of considerations in the choice of a propeller. First, clearances between propeller tips and hull must be made generous, so that the impulses impressed on the hull by the blades will not be excessive. Second, the propeller must be carefully made and checked for unbalance. Third, the blade impulses per minute at normal operating RPM's must not coincide with one of the principal natural hull frequencies. In a single screw ship a 4-bladed propeller has an advantage over a 3-bladed propeller in that the impulses of opposite blades on the stern frame will tend to balance each other. In some cases of single screw patrol craft 5-bladed propellers have been used, despite the fact that the blade impulses are then unbalanced. The reasons for their success were, (1) reduced magnitude of blade impulses, since the forces were divided among 5 blades instead of 3 or 4, (2) the frequency of blade impulses was brought clear of a natural hull frequency.

Maintenance

It is very important that whenever a new propeller is ordered tolerances of pitch and blade section dimensions be specified to be very close—not over ±1% for pitch. Unevenness of surface, roughness, and irregularities of pitch can have serious effects on efficiency. Therefore, the check measurements made upon completion of the propeller should be very carefully made and the blades should be highly polished.

Provided the propeller is the right one for the conditions of operation, the problem of maintaining propeller efficiency is primarily a problem of maintaining the blade surfaces in a smooth, unmarred condition.

The material which has been found most satisfactory for both smoothness of surface and strength is manganese-bronze. Not only does it take a high polish in the new condition, but since it is highly resistant to corrosion in salt water the surface can be kept smooth under most conditions. Although cast iron is not a very satisfactory material from the above points of view, it is sometimes used for harbor craft where damage to propellers is frequent. In case a blade strikes an underwater obstruction it will be broken off clean rather than bent or twisted. As a result, harm to shafting and machinery is less likely to result.

In order to reduce the expense of propeller repair, built-up propellers are sometimes used (either bronze or cast iron). Blades are individually bolted to the hub, but even though the hub is kept to a minimum in size and nuts are carefully faired in with concrete, the efficiency cannot be as high as that of a similar solid propeller.

For most services the cumulative effect on fuel consumption of the higher efficiency of the solid propeller should pay for any extra cost of repairs. Even a comparatively serious damage to a bronze propeller can be repaired—twisted blades can be straightened or a new piece of blade cast on. For efficient operating, propellers should be inspected at every drydocking, and even minor nicks repaired.

Another source of propeller roughness is cavitation, which was discussed in the preceding article. If serious pitting is found as a result of this, a new propeller designed with greater blade area and/or modified blade outline may be necessary.

(Continued on Page 51)

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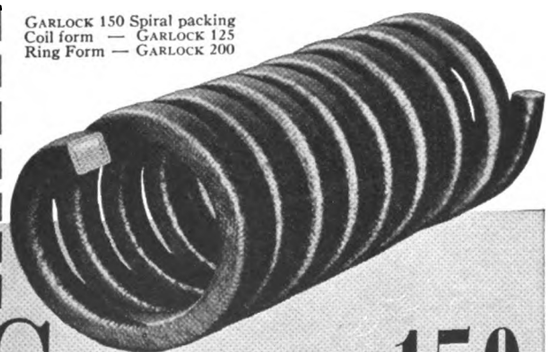
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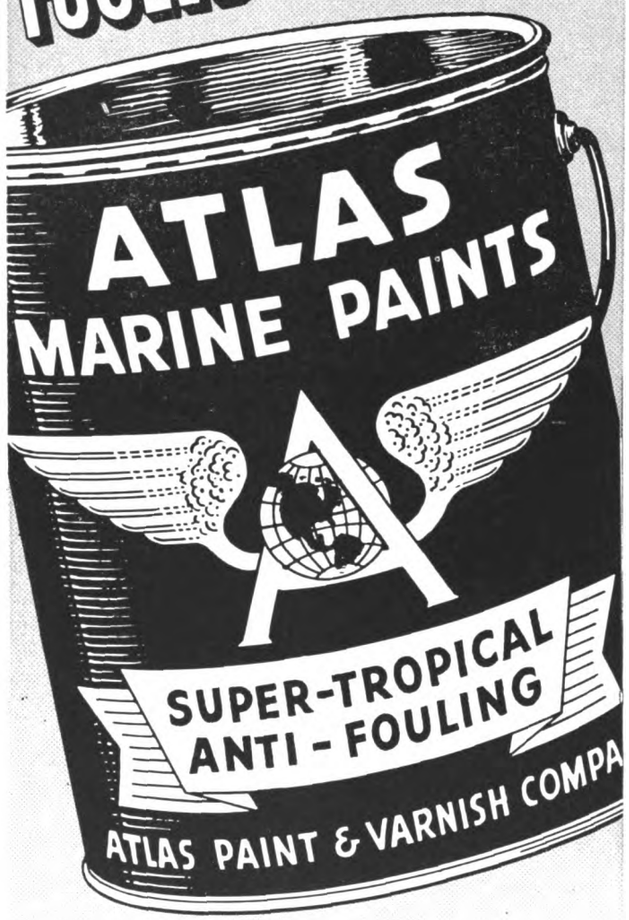
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ms C-COASTER LSM TO LUMBER CARRIER

A new method of hauling lumber by water from the Pacific North-West sawmills to the California markets was adopted by a San Francisco shipping firm, W. R. Chamberlin & Co., recently when it put the ms C-COASTER, a converted LSM, into service as a speedy coastwise carrier, with no cargo handling equipment aboard, for the lumber, in packages, is placed aboard and taken off by shoreside cranes.

The C-COASTER, costing around $180,000 was converted by the Commercial Ship Repair Co. at San Francisco earlier this year and in July was hauling lumber from Coos Bay, Oregon, to Long Beach, California for the Irwin & Lyons Lumber Co., North Bend, Oregon, sawmill operators, who also are running their own former LSM, the ms ROLANDO, in the same trade.

Speed is the essence of the C-COASTER operation and little time is wasted in her shuttling operation. At the sawmill dock a stiff-legged crane drops lumber into the vessel's wells and onto her decks in "packages" of around 3,500 board feet each, and at the Southern California pier the cargo is taken off by a mobile crane.

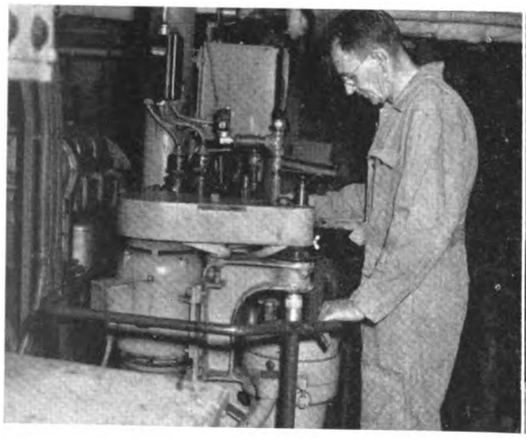
On her first trip from Oregon to Southern California she carried 609,000 board feet, on her second trip 641,000 and on her third trip, 657,000. It was estimated it would take six hours to discharge her, but this time has been cut to a little more than five hours.

The vessel travels between 12½ and 13½ knots and can make a round trip from 5½ to 6 days. It is approximately

(Continued on Page 50)



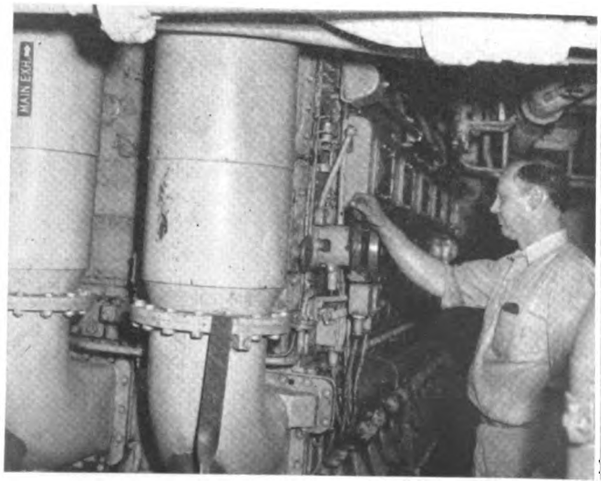
CHAMBERLIN MEN ON TRIAL TRIP OF C-COASTER—Left to right: W. R. CHAMBERLIN, president; T. L. TOMLINSON, marine superintendent; J. G. KELLY, superintendent engineer; A. A. EGGUM, operating manager and W. R. CHAMBERLIN, Jr., vice president.





WILLIAM B. BURNELL, left, above, Chief Engineer, at one of the C-COASTER'S two Sharples type 14NV2P oil purifiers aboard.

R. W. REGGENBIHL, right, above, Chief Officer of the C-COASTER, looking into the 7-inch viewing scope of the console of the Westinghouse type MU radar, the first of its kind installed on any cargo vessel on the West Coast. The antenna of this radar is completely enclosed, an exclusive feature of Westinghouse marine radar which offer the advantages of physical protection, presents wind effects, and reduces icing effects.





C. G. MARTS, left, First Assistant Engineer, at the control of one of the two 1,800 hp Fairbanks-Morse Diesels which power the C-COASTER.

CAPT. C. H. ANDERSON, right, Master of the C-COASTER, talking over the 75-watt radio telephone installed by Radiomarine Corporation of America. This is RMCA's well-known ET-8012 type telephone, with a consistently sustained radius of several hundred miles and is equipped with a bell-ringing unit so calls from shore may be made.

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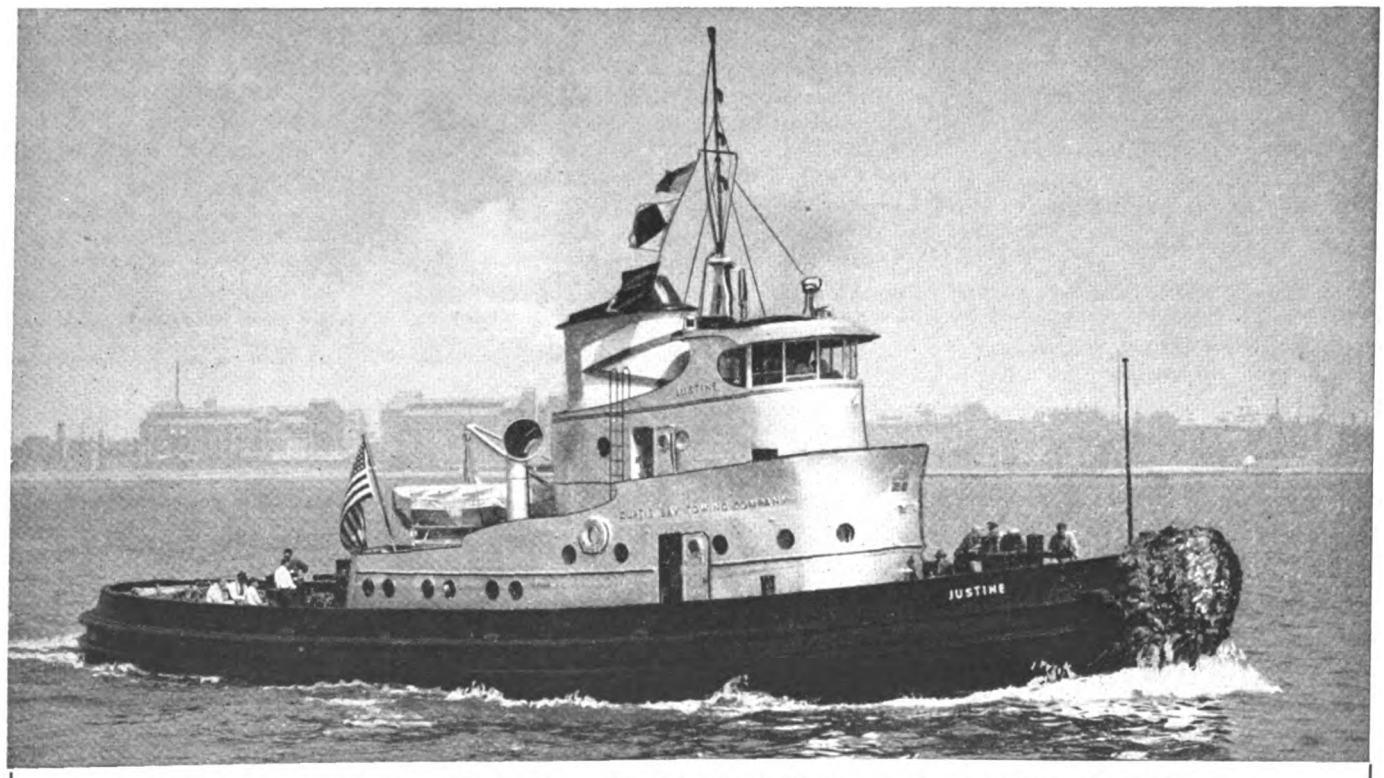
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THE SOCIETY OF PORT ENGINEERS

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NW Engineers Interested In Crane Packing Demonstration

At Portland and Seattle C. W. Nelson, San Francisco manager, Crane Packing Company, gave an address before the Societies of Port Engineers, Columbia River Area and Puget Sound.

The equipment under discussion consisted of two compact units. One unit was a lapping unit, marketed under the trade name of "Lapmaster." Weighing approximately 150 pounds, the "Lapmaster" is made of cast aluminum and embodies a continuously agitated tank, an alloy iron lapping plate driven by a gear reduction motor, and three combined work holders and wear rings, held in place by adjustable bars.

With the "Lapmaster" skilled operators are not necessary to finish a wide range of parts to tolerance flat plus or minus one light band, or .00000010 inches. In one lapping operation parts may be of different sizes, shapes and heights; and a wide range in the length of the work, diameter of parts, the kind of parts and kind of material is permitted. Tolerance on a piece of work one inch in diameter uniformly concave within .0000348 plus or minus .0000116 were discussed by Nelson as casually as engineers usually discuss tolerance in thousands.

Proving equally as interesting was the demonstration of the Franklin tube expander fitted with Dudley electronic controls. Consisting of the electronic control, automatic voltage regulator, electric expander driving motor and precision tube expander, the set is particularly adapted for precision expanding of heat transfer equipment tubes.

The electronic control operates by causing the motor to stop the instant the torque load of the motor reaches a pre-determined value. These values are determined by laboratory tests and all data necessary to attain the correct metal to metal joint required is supplied on a calibration plate chart securely attached to the control cabinet. The chart includes calibrations for varying sizes and gauges of tubes.

The driving motor, main switch, micro unit and expander are contained in a hand-grip pistol-like tool weighing approximately seven pounds. At the Society meetings at both Seattle and Portland, even as long as an hour and a half after usual adjournments, members had not tired of handling and practising with the equipment.

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Summer vacation ends next month for both the San Francisco and Los Angeles societies of port engineers. The Southern California group meets again September 1st and the San Francisco organization on September 7th.

LSM to Lumber Carrier

(Continued from Page 48)

720 miles by water between the vessel's two terminals.

The C-COASTER is powered by two Fairbanks-Morse Diesel engines, is equipped with two Sharples oil purifiers and, in the conversion, a Radiomarine Corporation of American telephone and a Westinghouse radar were put aboard.

The C-COASTER is 203 feet 6 inches in length, 34 feet beam and her low draft of 4½ feet light and 9½ feet loaded enables her to go into smaller harbors where the depth is only 10 feet.

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Operation & Maintenance of Steam Turbines and Gears

(Continued from Page 44)

(b) Clean up bearings and Journals as required.

(c) Replace any bearings which have excessive clearance or wiped babbitt.

(d) If journals are scored follow procedure noted above for turbine journals.

Note: If pinion bearings generally show wear or scoring consideration should be given to opening and examining other gear bearings.

(2) Inspect HP and LP Side High Speed Gear Thrust Bearings.

(a) Clean up bearing and runner as required.

(b) Measure thrust bearing clearance and rest as required.

Note: With thrust bearing removed a clearance check of HS gear bearing may be simply made by feeler gage.

(3) Inspect HP and LP Side Flexible

(Continued on Page 52)

SOCIETY OF PORT ENGINEERS OF PUGET SOUND . . . Standing: C. W. NELSON, San Francisco manager, Crane Packing Company, preparing to demonstrate on the left; Dudley electronic control tube expander; and at right end of table the "Lapmaster" lapping machine. Left to right: E. D. TUCKER, U. S. Maritime Commission, Society secretary-treasurer, Mr. NELSON; CARL BARDUHN, Atlas Packing and Rubber Company, Seattle.

Bottom row, left to right: M. W. FELTON, Alaska Steamship Company, Society president; G. W. KACHLIEN, Bogle, Bogle and Gates, guest speaker; LOUIS BIANCHI, Washington Iron Works; AL SOLIBAKKE, Puget Sound Freight Lines, Membership Committee chairman; HENRY MEHUS, Puget Sound Navigation Company.

SOCIETY OF PORT ENGINEERS, COLUMBIA RIVER AREA . . . Bottom row, far right, AL FORD, Westinghouse Electric Corp., newly-elected Secretary-Treasurer; K. M. WEBB, U. S. Salvage Assoc., newly-elected Society President.



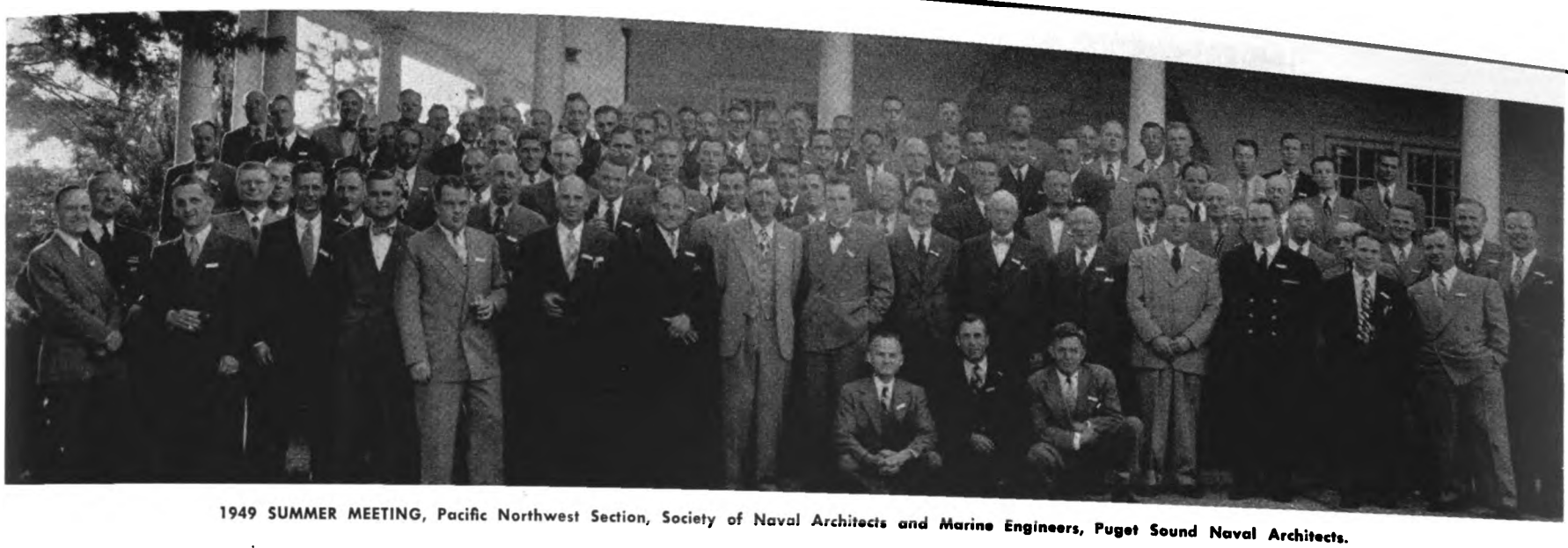








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1949 SUMMER MEETING, Pacific Northwest Section, Society of Naval Architects and Marine Engineers, Puget Sound Naval Architects.

Naval Architects Meet At Puget Sound Naval Shipyard

Puget Sound Naval Shipyard was the scene of a special summer meeting of the Pacific Northwest Section of the Society of Naval Architects and Marine Engineers in June. More than 100 members and guests assembled.

Held at the invitation of Admiral E. W. Sylvester, Commandant Puget Sound Naval Shipyard, the visitors were shown through the shipfitter and machine shops and then boarded the carrier ESSEX for a view of work underway preliminary to technical discussion of the work which followed at the evening session.

K. G. Johnson, supervisor, structural section, discussed structural design problems in connection with the extensive alterations. He noted the carrier's deck is being strengthened to withstand an impact load from airplane tires of 90,000 lbs. or six a ndone half times the impact for which the deck was originally designed. He explained addition of strengthening members, a new gasoline storage arrangement, and other improved features occasioned stability and displacement calculations which resulted in plans being developed for widening the beam. Details of methods pursued to accomplish the desired end result were explained.

A paper on welding problems in connection with alterations to the ESSEX, by M. D. Stepath, included remarks on procedures developed at Puget Sound Navy Yard to correct surface cracking in propeller shafts, and a description of a welding tool perfected at the yard to reach areas which are not easily accessible.

Commander W. H. Hilands, USN, aeronautics officer and administrative assistant to Admiral Sylvester discussed modern high pressure gasoline systems which detailed the modern fleet carrier's gasoline storage system with particular emphasis on the new "saddle type" gasoline storage being installed on the ESSEX.

The program was arranged by a committee consisting of Admiral Sylvester, chairman; Al Oass, W. H. Watkins, Naval Yard naval architects; Captain Hugh B. Webster, planning officer; Captain Robert Bell, production officer, and Commander R. B. Madden, industrial engineer. H. C. Hanson, Pacific Northwest section chairman, presided.

Next meeting of the section will be at Gearhart, Oregon, August 27 and 28.

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Naval Architects Hear Discussion on Faulty Shafts

A paper on faulty tail shafts and liners being found in C-3 and Liberty type vessels will be presented at the September 20th meeting of the Southern California Section of The Society of Naval Architects and Marine Engineers by William Lambie, naval architect of Wilmington, Calif.

A discussion of this subject took place at the Section's June meeting, when Joseph Hare, United States Maritime Commission, indicated heavier shafts were needed to remedy these faults and Mr. Lambie asserted his belief that the propellers needed redesigning. Frank Cavanaugh, Cavanaugh Machine Works, told of the trouble with tail shafts on the earlier ss VENTURA and SONOMA and said the problem was solved when solid wheels were replaced by built-up wheels.

At the suggestion of Thomas Forster, Forster Shipbuilding Co., chairman of the Section, it was decided that unemployed student members may attend the meetings and pay only $1.50 for their dinners, the difference being pro-rated by the other members present.

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Naval Architects Form Gulf Section

The Society of Naval Architects and Marine Engineers formed another new local section of the Society, to be known as the Gulf Section. This is the ninth local section of the Society to be organized, and continues the expansion policy of the Society, originating in 1941 when the first local section was established in Philadelphia. Subsequently, the following sections were formed: New York Metropolitan; New England; Chesapeake (Washington, Baltimore, and Virginia areas); Great Lakes, with headquarters in Cleveland; Northern California, with headquarters in San Francisco; Pacific Northwest, with headquarters in Seattle; and Southern California, with headquarters in Los Angeles. All of these sections have been successful in maintaining a regular schedule of technical meetings throughout each year, stressing particularly scientific progress in the shipbuilding and ship operating industries.

Formation of the new Gulf Section, with headquarters in New Orleans, cover the Gulf coast from the West coast of Florida around to Texas. The new section is planning a series of technical sessions under the guidance of the following officers who have been elected for the 1949-1950 year.

Chairman: George W. Szepinski, Naval Architect, Alabama Dry Dock and Shipbuilding Company, Mobile Alabama.

Secretary-Treasurer: William K. B. Potts, Jr., Chief Engineer, Gulf Shipping Corporation, Mobile, Alabama.

Vice-Chairmen: J. A. Marquette, Manager of Steamships and Domestic Pier Operations, Southern Division, United Fruit Company, New Orleans, Louisiana; Edward T. Malloy, President and General Manager, Levingston Shipbuilding Company, Orange, Texas; Henry Hill, Vice President, Gulf Shipbuilding Corporation, Mobile, Alabama; Munger T. Ball, President, Sabine Towing Company, Inc., Port Arthur, Texas.

Executive Committee: Neville Levy, President, Equitable Equipment Company, New Orleans, Louisiana; D. C. Millar, c/o George G. Sharp, New Orleans, Louisiana.

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Propeller Characteristics Their Effect on Performance

(Continued from Page 46)

Fouling of propeller blades cannot be prevented, but careful and frequent cleaning and polishing is well worthwhile. At every drydocking the propeller should be given very close attention, since the fouling of the relatively small area of the propeller may have as serious consequences to propulsion as the fouling of the entire underwater hull.

In conclusion, it must be emphasized that one of the simplest methods of obtaining improved propulsive efficiency is to give careful attention to the propeller. This involves obtaining the best possible propeller design for the condition of operation, securing a new propeller when any of the conditions change appreciably and maintaining the propeller surface at maximum smoothness at all times.

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Operation and Maintenance of Steam Turbines & Gears

(Continued from Page 50)

Coupling Between High Speed Gears and Low Speed Pinions.

(a) Clean up coupling and teeth as required.

Each One Year Maximum

(1) Inspect Gear Teeth Of Each Element Through Inspection Holes For Notation Of Apparent Tooth Contact And Tooth Surface Condition.

(a) If any misalignment or wear of teeth shows determine and remedy cause.

(2) Inspect HP and LP Side High Speed Coupling Between High Speed Pinion And Turbine.

(a) Clean up coupling and teeth as required.

(3) Inspect Oil Spray To Meshes.

(a) Clean out all spray nozzle strainers. (If the oil system has become dirty at any time this check should be made more frequently.)

AUXILIARY SET REDUCTION GEARS

Each Four Years Maximum

(1) Open Gear Casing.

(a) Inspect all bearings and journals and clean up as required. Measure bearing clearances and crown thicknesses.

(b) Replace any bearings which have excessive clearance or wiped babbitt.

(c) If journals are scored follow procedure given for turbine journals.

(2) Inspect Thrust Bearings And Runners And Clean Up As Required.

(3) Check Alignment Of Set.

Each One Year Maximum

(1) Drain Oil And Clean Out Sump.

(2) Inspect Gear Teeth Through Inspection Hole For Notation Of Apparent Tooth Contact And Tooth Surface Condition.

(a) If any misalignment or wear of teeth shows determine and remedy the cause.

While the above maintenance schedule can hardly be complete in every detail it will serve as a guide for general planned maintenance.

As noted before the time interval of inspection for particular cases is entirely dependent upon operation and experience may well dictate intervals other than those given.

Maintenance Data Sheets

In order to aid in the performance of maintenance inspections it is suggested that regular data sheets be used for recording the measurements that are made. Figures 2a, 2b, and 2c show typical data sheets which have been used in the supervision of inspections of turbines and gears. By their use records are kept in an orderly manner and the possibility of neglecting to make certain checks is minimized.

As regards the latter, and especially for inspections involving the opening of casings, which is done only at relatively long intervals and at considerable expense, it should be recognized that a neglecting or a short-cutting of measurement checks cannot be considered good maintenance procedure.

Along with the measurements a record should be made of the condition of the unit as regards general cleanliness and wear. After reassembly a record should also be made of how the unit operates with respect to noise and vibration.

Some Common Maintenance Items

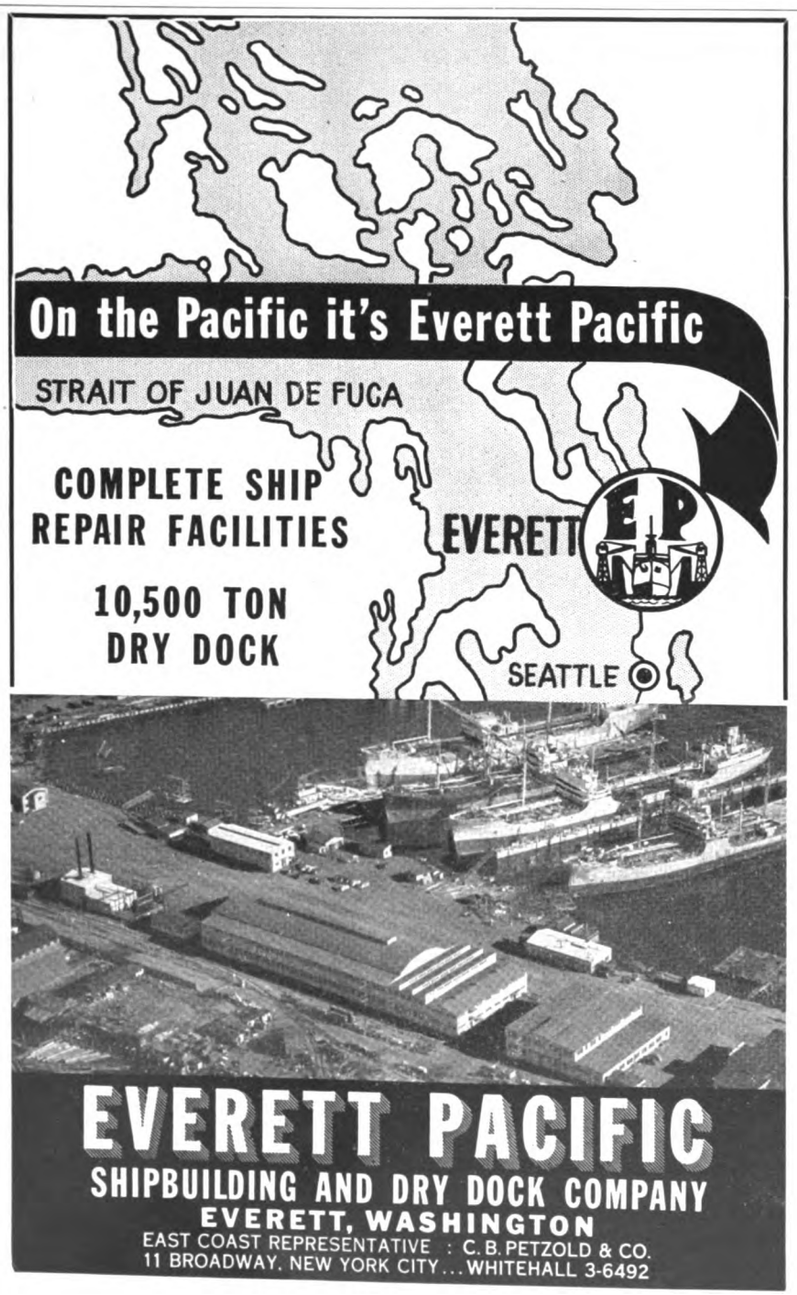
While a consideration of all the specific maintenance items of the marine turbine and gear that may arise is not possible here, a brief discussion of some few of possible occurrence will be made. Vibration of turbines and its correction, cleaning of turbine steam path parts, and bearing wear and replacement are problems which may at one time or another be encountered.

Vibration of Turbines

Excessive vibration at any time is detrimental to a turbine and should not be allowed to continue. Basically it results in the generation of repeated forces that are transmitted from rotor journals to bearings and bearing housings, thence to the turbine structure and foundation, and finally to the surroundings. The repeated forces result in repeated stress of parts and their failure due to fatigue of material is a distinct possibility. Failure of such turbine parts as bearings, governor linkages, and oil piping have resulted. Especially those parts (and parts remote from the turbine also) which happen to be in close resonance to the vibration frequency will be subjected to heavy repeated stress and they may fail most unexpectedly.

In addition as previously mentioned under operation, shaft vibrations may wipe out packings and cause excessive leakage clearances.

The causes of vibration in turbine rotors are several, such as, misalignment, warped shaft, rubbing, wiped journal or thrust bearing, worn couplings, bearing oil whip, and unbalance. While the last is most commonly blamed for vibration, consideration of and check for the others should always be made first. A complete discussion of causes of vibration of turbines is in itself a broad subject and cannot be



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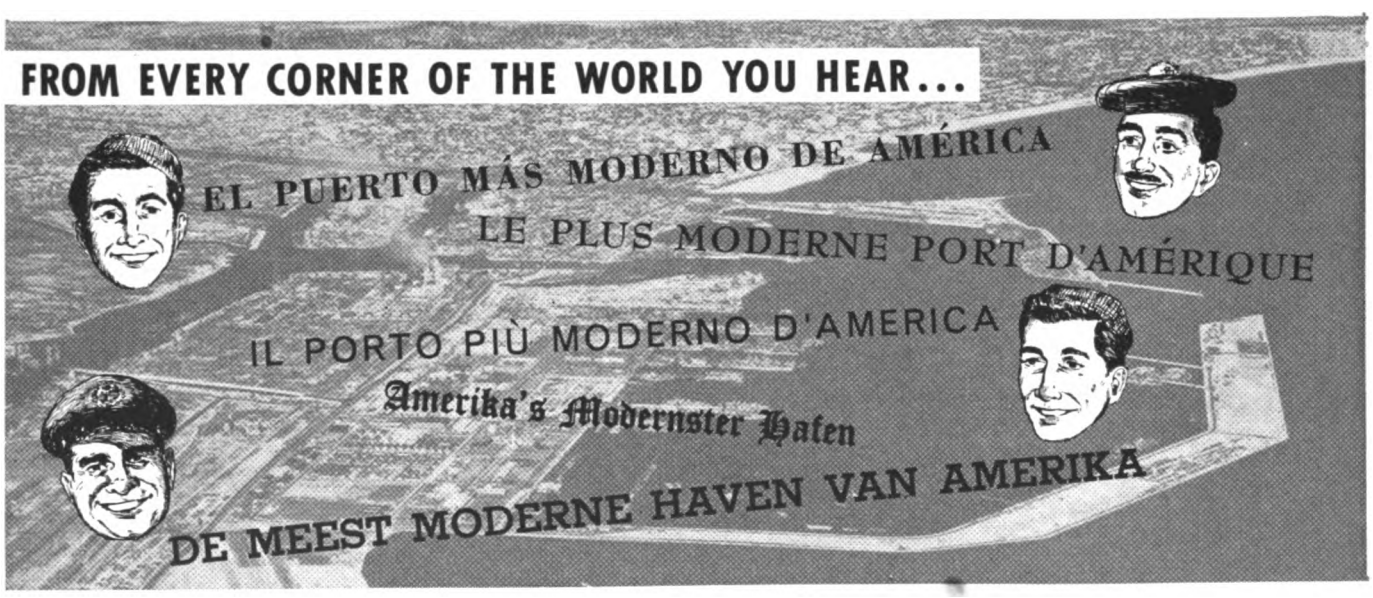
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carried on here; as regards unbalance, however, some comments may be of value.

Unbalance of a turbine rotor that has been in service is generally the result of a bent shaft, uneven wear of parts, uneven deposit of boiler compound, or the loss of some part as a bucket or band. Obviously, the particular cause of the unbalance should be determined and correction be made. Bent shafts should be straightened or be replaced if bending is appreciable, dirty rotors should be cleaned, and buckets or bands that have been lost should be replaced. (Lost buckets, if the number is few, are sometimes compensated for by removal of an equal number of opposite buckets.) Following repairs, a check balancing of the rotor should be made before placing it in service.

Generally speaking repairs to a turbine rotor of the latter type may be done either in place or on removal of the rotor from the ship to a shore-side shop. Generally small rotors can be lifted out of a ship and be repaired ashore most advantageously while large rotors may most advantageously be repaired in place.

Where rotors are removed from the ship, check balancing is performed in dynamic balancing machines. For high speed rotors made up of integral parts, as in the case of solid coupled turbine rotors and pinions for auxiliary generator sets, the trueness of the assembled rotor should always be checked and corrected if needed before balancing the complete rotor. In certain cases it will also be advisable to check balance each individual part and then check balance the assembly as each major part is added.

The check balance of a rotor left in place may be made either with a portable balancing unit set up in the casing or above the casing, or by balancing at speed when steam driven. In regard to the latter most turbine rotors have external balancing rings or internal balancing rings, available through casing access holes, of sufficient radii- and weight-adding-capacities to allow correction for the usual amount of unbalance that occurs. Portable balancing equipment is available to determine the position and amount of correction weight with a relatively few number of trial runs. By the use of this equipment steam running balance may often be the most economical method of check balancing, and should always be given due consideration in shipboard balancing problems.

The adding of balance weights or removal of weight should be at the location designated by the manufacturer and in such a manner as to cause no local stressing of parts. Welding of weights on turbine wheels or drilling of wheels for weight removal should not be done.

All in all, the balancing of a turbine rotor should be under the direction of one who knows not only balancing procedure but who also is familiar with the construction features of the rotor and the importance of checking the cleanliness and trueness of the rotor and its journals.

Cleaning Turbine Steam Path Parts

The cleaning of turbine steam path parts on marine turbines can be a troublesome and costly job. Basically it involves the proper cleaning of the stationary parts as casings, diaphragms, nozzles, and labyrinth packing, and the rotating parts as rotor buckets, wheels, and packing fits. Generally too the time available to do the job will be very limited.

Where steam has been clean, no continuous leakage of steam into the unit has occurred, and proper drying out of the turbine on shutdown has been practiced, the internal steam path parts will generally not be very dirty. Hand cleaning by wire brushing and emery cloth polishing, followed by blowing out with air will generally suffice. Labyrinth packings may be stuck in their slots and, if so, can usually be freed with penetrating oil.

If boilers have been salted and priming has resulted, the internal parts may be cleaned of the water soluble deposits by washing.

Washing of turbines without lifting the casing with wet steam obtained by the spraying of condensate into the inlet steam has been practiced successfully on land turbine installations, but because of the special precautions needed and the set up required, it has not been adapted to marine practice.

Filling of the casing with hot water and turning the rotor over slowly will clean the rotor and lower halves of the diaphragm of water soluble deposits, but will not effectively clean the upper halves of the diaphragm. However, this method may be used for emergency cleaning of salted up turbines. Obviously, if this involves the filling of the condenser, this latter must be adequately supported. For a thorough cleaning, though, the casing will have to be lifted and the parts washed down with hot water and wet steam.

Control valves stuck from a salting up should always be removed and stems and bushings or packings be cleaned and polished.

Where continued service with contaminated steam has taken place and the in-



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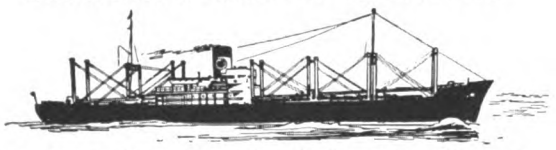
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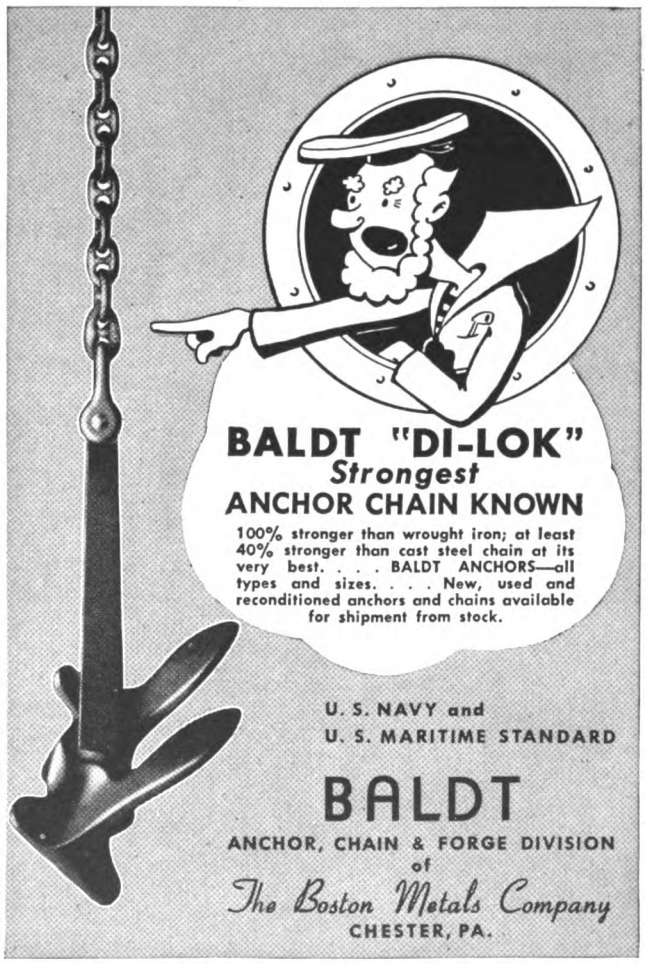


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terior of the turbine has been badly dirtied or where heavy corrosion has taken place, the casing must be opened for proper cleaning of the turbine. While broad surfaces as casings, diaphragm discs, rotor wheel discs, and packing fits may be cleaned by hand scraping and polishing, it may be impossible to effectively clean the bucket and diaphragm nozzle sections by hand. In this case, cleaning has been by fine grit blast or by chemical removal.

Because of the confined space of the engine room, grit blast cleaning must be done outside with consequent removal of the turbine rotor. By using fine grit blast (either wet or dry has been used) a very good cleaning of rotors and diaphragms is attained.

Chemical cleaning may be done outside the engine room and in some instances inside the engine room. When performed in place the upper half turbine casing is turned over and filled with cleaning solution. The lower half casing exhaust opening is blocked and the casing is then filled with solution and the rotor revolved slowly. Utilizing properly inhibited cleaning agents and following up with neutralizing agents and water washing, chemical cleaning has been advantageously accomplished. It should, however, always be done under the supervision of one familiar with chemical cleaning and with the turbine structure.

Following all major cleaning operations of a turbine rotor its balance should be checked before returning it to service.

Bearing Wear and Maintenance

Bearing wear and bearing replacement have already been touched upon, but a few additional comments may be of value. Ordinarily the bearings of turbines and gears under continued good operating conditions can be expected to have but little wear. Where wear has occurred it can usually be traced to one of the following causes: loss of oil, dirt or other foreign particles in the oil, excessive vibration of the rotor, undue loading of the bearing caused by misalignment of the rotor, improper assembly of the bearing, or loss of cooling water to the bearing oil cooler.

Where bearing wear has taken place, the criterion for replacement of the bearing should be first the condition of the babbitt and second the bearing clearance wear down. If the babbitt surface is badly scored so that smooth surfaces of sufficient width to be oil-film-forming cannot be attained on cleaning up or if the scoring is such as to reduce appreciably the load bearing area of the babbitt, then the bearing must be replaced. If bearing wear down is sufficient to appreciably affect the alignment or the axis location of the rotor involved, then replacement is necessary. Also certain types of stabilizing bearings used for high speed lightly loaded journals require close clearance to be effective and must be replaced if wear results. The recommended maximum wear down of bearings is usually given in the turbine and gear instruction book.

There are several methods in general practice for measuring bearing wear; to name a few (1) direct measurement of journal diameter and bearing bore with outside and inside micrometers, (2) measurement of bridge gauge dimensions or micrometer depth dimensions, (3) measurement of bearing crown thicknesses, (4) measurement by insertion of feelers between journal and top of bearing. Each method has certain advantages and disadvantages, but in general (1) and (3) are preferred for the simple reason that they require rolling out the lower half of the bearing, thus allowing an examination of the babbitt surface to be made. Method No. 3 is particularly effective for checking gear bearings where it is required that fore and after journal locations be kept constant so that gear alignment will be maintained. The other methods (2) and (4) are of distinct value for perfunctory checking where time limitation or general non-availability of the bearing is involved.

Another cause for replacement of bearings is loose babbitt in the shell caused by breaking of the bond between babbitt and shell. Bearings with loose babbitt have operated for long periods of time, but certainly on bearings for high speed journals it is wise to make replacement as the babbitt may tend to break up.

Conclusions

The modern marine steam turbine and gear are built to high standards of design and manufacture. Service under all types of conditions has proved the efficiency and reliability of the units. The turbine and gear are high class machinery and primarily require high class workmanship and thus their operation and maintenance should not be undertaken by inexperienced men. With good operation and good planned maintenance the ship operator will find that the marine turbine gear auxiliary and propulsion unit will give many years of over-all economical and reliable service.



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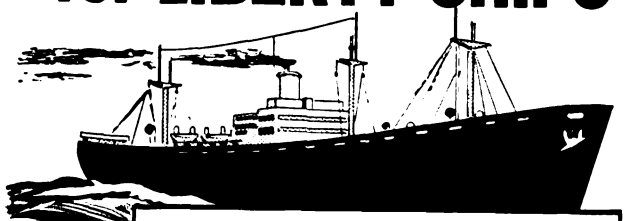
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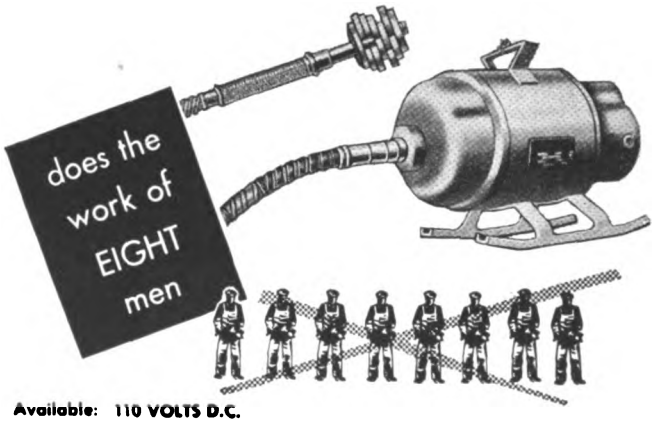
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EQUIPMENTALK

Hopwood Elected Vice President of Hagan

William W. Hopwood has been elected vice president of Hagan Corporation, Pittsburgh combustion and chemical engineering firm, and its subsidiaries—Calgon, Inc., Hall Laboratories, Inc., and the Buromin Company.

Mr. Hopwood has been associated with Hagan Corporation and its subsidiaries for many years, with the exception of four years' leave of absence while serving in the Army Air Corps during World War II.

Hagan also announces the Ash Engineering Company, which represents Hagan Corporation in the Philadelphia district, has moved its offices to 246 South 15th Street, Philadelphia 2, Pennsylvania.

Another change in the Hagan field organization is the transfer of Charles A. Mitchell, who formerly served in the Cincinnati district, to take charge of a new sub-district office at Baton Rouge, covering Louisiana and western Mississippi. In his new work he is associated with Joseph W. Eshelman and Company, Inc., which represents Hagan and other subsidiaries of the Pittsburgh combustion and chemical engineering firm in the South.

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American Mfg. Appoint Chas. Dilke Representative

American Manufacturing Company, Brooklyn, N. Y., one of the world's largest cordage producers, announces the appointment of Charles J. Dilke as its representative for rope sales in the San Francisco area.

Mr. Dilke, long well-known in Pacific Coast marine circles, formerly was president of the C. J. Hendry Co., San Francisco and southern California ship chandlers.

He will cover the marine, fishing, hardware and industrial fields for American Manufacturing, with offices at the San Francisco Warehouse Company, 383 Brannan Street, San Francisco, and will stock manila rope in sizes from ¼-inch diameter to nine inches in circumference. The telephone number is YUkon 2-5707.

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Washington Aluminum Co. Moves to Larger Quarters

Robert Sanford, vice president of Washington Aluminum Co., Washington, D. C., designers and fabricators of all-aluminum marine equipment, reports his firm has moved its factory to larger quarters in the Arbutus section of Baltimore at the corner of Knecht Avenue and Pennsylvania Railroad. Along with a private railroad siding, the new plant has three times the floor space of their old factory in Highland Town in Washington.

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Sciple of E. F. Drew Visits West Coast Field Men

A recent visitor to the Pacific Coast was Carl E. Sciple, New York, sales manager of the power chemicals division of E. F. Drew & Co., which includes direction of the sales of Ameroid to the maritime industries. Mr. Sciple visited with Jack Churchill, San Francisco, West Coast manager for Drew's power chemicals division, and held a sales conference with Drew field men.

CHARLES J. DILKE, appointed representative for rope sales in the San Francisco Area for the American Manufacturing Company, Brooklyn, New York.



CARL E. SCIPLE, New York, Drew sales executive, who recenty visited the Pacific Coast.



Westinghouse Fans Prevent Corrosion on Mothball Fleet

Thousands of tiny electric fans are serving as the lungs of many ships in the Navy's "mothball fleet." These three-inch blowers, made by the Sturtevant Division of Westinghouse, Hyde Park, Boston, Massachusetts, are part of dehumidifying systems installed aboard the inactivated ships to prevent corrosion in sealed-off compartments.

Without such precautionary measures, corrosion would result from moisture condensing on exposed metallic surfaces, it is explained by J. C. Thompson, the division's sales manager. The complete drying apparatus is made by the Dryomatic Corporation of America.

The fan in each unit circulates air in the sealed-off compartment through silica jell, a dehumidifying material, until the air's humidity has been reduced to 30 percent or less, a point low enough to prevent rust.

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Shipboard Refrigeration Highlighted in New Booklet

"Recommended Practice for Mechanical Refrigeration Installations on Shipboard" —Standard No. 26, has been issued by the American Society of Refrigeration Engineers.

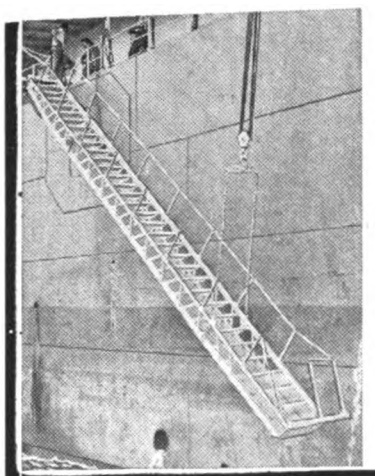
The recommendations have been drawn up to serve as a guide for the design, construction, installation, operation, tests, and inspection of mechanical refrigeration equipment for the extraction of heat aboard merchant vessels. They are limited to systems obtaining cooling effect by the vaporization of a refrigerant, the compression of same by power driven mechanical equipment, and condensing of the compressed gas for re-use.

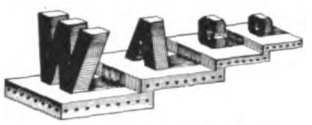
Refrigerant classification, use of refrigerants, highside and pressure vessels, piping, valves, fittings, and controls, evaporators and cooling coils, installation and tests, spare parts and tools, operation, maintenance, and inspection are some of the topics covered in this standard.

A committee composed of representatives of manufacturers and users, including the American Bureau of Shipping, U. S. Maritime Commission, and U. S. Coast Guard was formed several years ago by the ASRE and met at frequent intervals to produce Standard No. 26. Chairman of the committee is W. L. Keller of the United Fruit Company and vice chairman is W. F. R. Karsten, General Electric Company.

Copies may be obtained from ASRE headquarters for $1.00 each.

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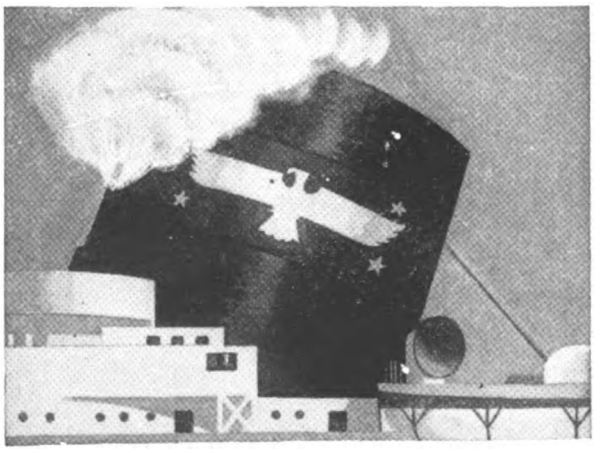
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HUGH D. NICKLE, District Manager for the Northwest territory of Combustion Engineering-Superheater, Inc., with headquarters at Seattle, Wash.

Nickle New Northwest Manager For Combustion-Engineering

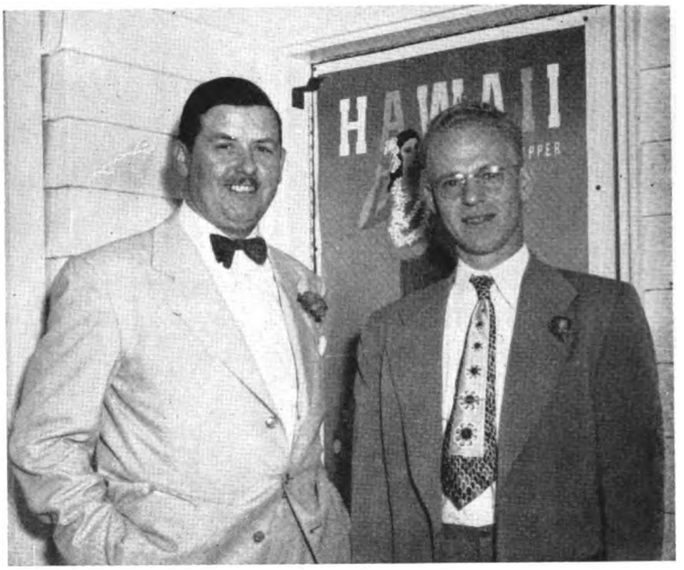
Combustion Engineering—Superheater, Inc., announces the appointment of H. D. Nickle as manager of the new district office for the Northwest territory including the states of Washington and Oregon. The office is located in the Skinner Building, Seattle, Washington.

Mr. Nickle, a mechanical engineering graduate, joined Combustion Engineering Corp., Ltd., of Canada, in 1937, as manager of service and erection in Montreal. Later he was engaged in contract work and in sales relating to the pulp and paper industry. In 1945, he was transferred to the New York Office of Combustion Engineering-Superheater, Inc., in charge of Paper Mill Division sales.

John Van Brunt, vice president of Combustion Engineering Company for more than a quarter of a century, and since January 1, 1949, engineering consultant for Combustion Engineering-Superheater, Inc., was honored on June 11 with the degree of Doctor of Engineering by Stevens Institute of Technology at its 1949 commencement exercises.

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HAWAII, HERE WE COME! Left to right: COLIN J. FRYER, new Honolulu representative for the Dearborn Chemical Co., Chicago, and EDWARD S. BUS, who has succeeded him as manager of the Washington-Oregon territory. The Dearborn company manufactures water treatment and NO-OX-ID rust preventative. Mr. Bus, a former chief engineer, makes his headquarters in Seattle.



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Worthington Pump Announces New Appointments

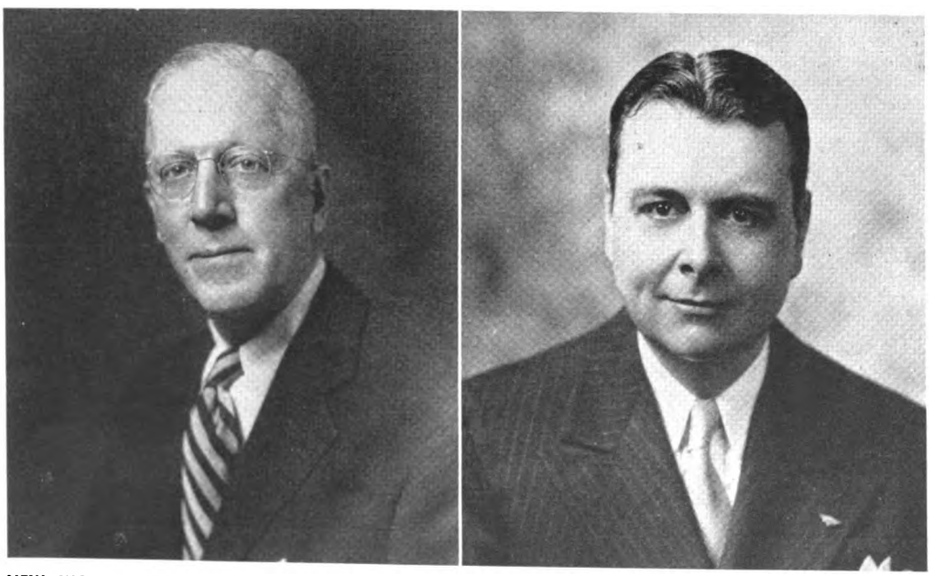
John J. Summersby has been named vice president in charge of the Worthington Pump and Machinery Corporation and has been succeeded as assistant vice president and general sales manager by Thomas J. Kehane, formerly commercial vice president, Pacific Coast.

J. P. McArthur, manager of the Worthington San Francisco district office, has become West Coast sales manager and his post has been taken by H. W. King, transferred from the company's Seattle office.

Mr. Summersby joined Worthington in 1916 as a student engineer at the Cincinnati plant. Later he was district manager at St. Paul; sales manager at Holyoke and assistant general sales manager.

Mr. Kehane went with Worthington in 1915 as a 14-year old office boy and studied engineering and architecture at Mechanics Institute and Pearr Institute. He has advanced through various positions and in 1944 was named to the Pacific Coast vice presidency. For the past two years he has been regional vice president of the Navy Industrial Association.

Mr. McArthur formerly was Pacific Coast manager of Worthington's marine division.



NEW WORTHINGTON PUMP AND MACHINERY CORP. APPOINTEES . . . JOHN J. SUMMERSBY, left, Vice President and THOMAS J. KEHANE, Assistant Vice President and General Sales Manager.

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New Process Chemical Co. Establishes Eastern Office

Edward Tranberg, formerly with the Atlantic Basin Iron Works, Brooklyn, is manager of a new office established at 415 Greenwich St., New York, by the New Process Chemical Co. Inc., San Francisco, manufacturers of the "Miracle Fluids"—New Process Super 16, a dual purpose fuel oil treatment, and Tricon, a dual purpose fuel oil conditioner.

The New Process Chemical Co. is the parent company of Tricon Laboratory and the New Process Service Co. This firm's engine room chemicals are handled in New Orleans by the J. B. Delany Co., in Southern California by Wilmington Engineering Service, Wilmington, and in Houston, Texas, by the Federal Warehouse Co. Tricon Laboratory is represented by the Wilbur-Ellis Co. in New York and Los Angeles and by Connell Brothers in Seattle and San Francisco.

Ritchie L. Dunn, president of New Process, announces the recent addition to his staff of Paul Holloway, for the last several years in the marine chemical business on the San Francisco waterfront. Mr. Dunn expects to name a marine representative soon in the Pacific Northwest.

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Edwin J. Macfarlan, widely known in San Francisco shipping and foreign trade circles, retired from service with Standard Oil Company of California July 1, after 48 years with the company. He was assistant to the manager of Standard's Foreign Trade Department.

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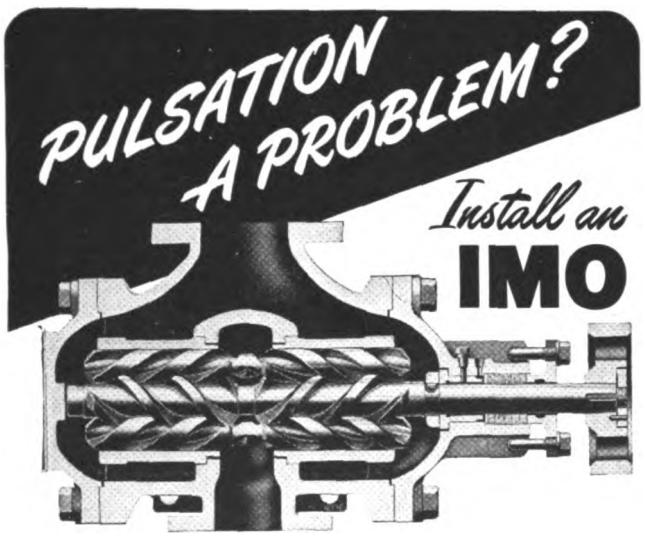
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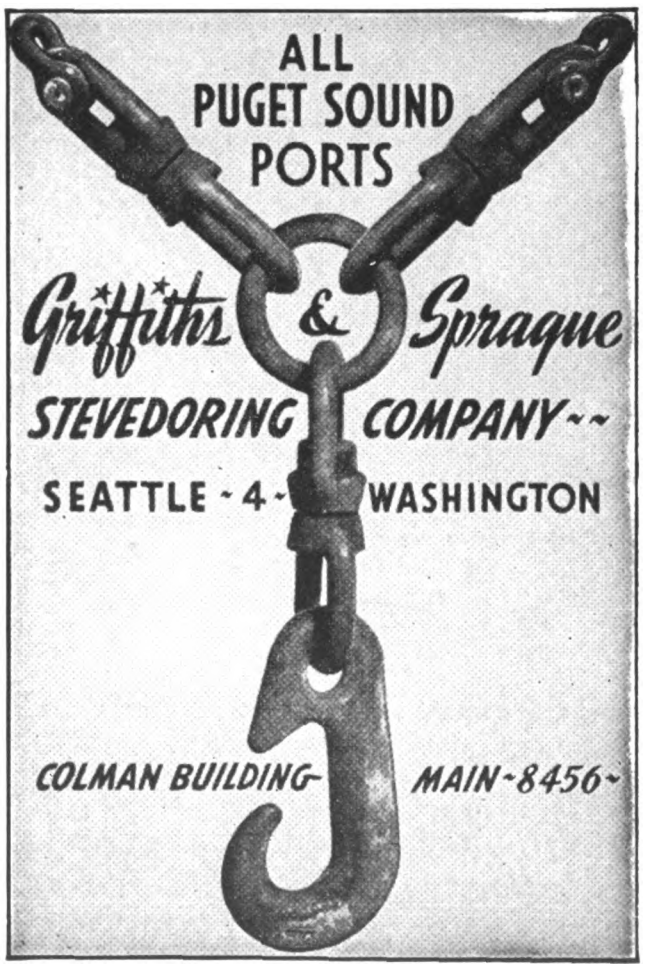
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PHILIP GIRALDI, new Manager of the Houston, Texas office of Sims Pump Valve Company of New York.

Sims Pump Appoints Giraldi Manager of Texas Office

Sims Pump Valve Company, New York, announces appointment of Philip Giraldi as manager of its Houston, Texas, office located in the M. & M. Building there.

Mr. Giraldi joined the Sims company in 1940 and handled sales and service work on the Sims inclined port rotating pump valves, Simsite graphitic packing rings and Hus*He*aters in the marine, refinery and industrial fields.

The Sims office at Houston carries, in stock, complete sets of inclined port rotating valves and Simsite graphitic packing rings for all types of ship pumps and services.

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Swett-Stone Holds Open House At New Quarters

Swett-Stone Corporation, San Francisco, marine engineering sales and service firm, recently moved from Mission Street to new and larger quarters at 770 Folsom and held an open house to show friends their new business home.

Included in the firms represented by Swett-Stone are Manning, Maxwell and Moore, Inc., Mason-Neilan Regulator Co., Cunningham Manufacturing Co., Ilg Electric Ventilating Co., Cuno Engineering Corp. and National Engineering Products, Inc.

A unique facility at the new Swett-Stone establishment is the use of separate stock rooms for different types of equipment. One room contains Ashcroft gauges, American thermometers and Mason-Neilan control instruments; another houses Hancock valves, Mason Nielan control valves and Consolidated safety valves; another has Ilg fans, blowers and motors; another Cuno filters, Cunningham air whistles and Copalite sealing compound and another sales catalogs, drawings and literature.

The place has an attractive front window display, separate offices for its sales engineers, mezzanine recreation space and excellent shipping facilities with a back alley truck entrance and an electric hoist.

Swett-Stone is unique in the fact that all its salesmen are engineers and well-versed in their products.

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C-O-Two Develops New Dry Chemical Extinguisher

A new dry chemical type fire extinguisher having more extinguishing effect per pound than other extinguishers of the same classification, has been placed on the market by the C-O-Two Fire Equipment Company of Newark, N. J.

After several years of development and test work the new unit is said to have features that make it one of the most efficient, fool-proof and easy to use fire extinguishers on the market. It is self-contained without extra protruding gadgets.

The C-O-Two dry chemical is free flowing. There are no syphon tubes or valves within the cylinder to become clogged or inoperative. The discharge hose and nozzle remain empty until the extinguisher is actuated.

The Underwriters' Laboratories, Inc., have approved the new extinguisher, which is available in 20 and 30 lb. capacities, rating them B-1 and C-1. The C-O-Two dry chemical is non-conducting, non-corrosive, non-freezing and non-toxic. It is highly effective on flammable liquid and electrical fires.

Recharging is simple for no special tools are needed. The dry chemical comes in 20, 30 and 50 lb. moisture proof containers. Complete information on the new dry chemical extinguishers can be obtained from the C-O-Two Fire Equipment Company, P.O. Box 390, Newark 1, N. J.

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San Francisco Committee Influences State Legislature

As a result of strenuous efforts of a committee of San Francisco area shipyards and marine vendors, the recent California Legislature passed a bill exempting the sale of ships and their component parts from the state sales tax. The bill was introduced by Senator Thomas Maloney, San Francisco, and had the support of the American Federation of Labor.



NEW DRY CHEMICAL Fire Extinguishers introduced by the C-O-Two Fire Equipment Co., Newark, N. J. Left to right, 20 and 30 lb. sizes. Approved by the Underwriters' Laboratories.

California is the last major maritime state to impose a sales tax on ships and equipment and, if Governor Earl Warren signs the bill, it will become effective October 1. Recently the state of Washington adopted similar marine tax exemptions with the result some shipping lines were by-passing California seaports and buying in tax-free Oregon and Washington.

Louis Ets-Hokin, Ets-Hokin & Galvan, marine electrical contractors, is chairman of the vendors committee, which was organized by the San Francisco Marine Exchange.

This committee, too, is campaigning against the letting of all Army transport contracts in Washington, D. C., and not in the west coast ports of embarkation and also against rumored plans of the Navy to buy direct from manufacturers if and when it takes over the operation of the Army transport. B. L. (Tote) Haviside, Haviside Co., ship chandlers, made a trip to Washington in this cause and, as a result, more bids have been called for lately on the Pacific Coast by the Army.

Allocation of shipbuilding to west coast yards also is being sought by the committee.

SWETT-STONE SHOW NEW QUARTERS . . . left to right: R. E. ESTES, JEFF BICKELL, IKE CALDWELL, JOHN DIETZMAN, L. A. STONE, MISS ROSALIND RUSCH, RONALD OLDERSHAW and ROY WILKIE.



FIRST MEETING OF SAN FRANCISCO AREA VENDORS AND SHIPYARDS COMMITTEE . . . left to right: LELAND D. ADAMS, C. J Hendry Co.; THOMAS A. SHORT, Thomas A. Short Co.; B. L. HAVISIDE, Haviside Co.; LOUIS ETS-HOKIN, Ets-Hokin & Galvan, chairman; HERMAN NICHOLS, Tubbs Cordage Co.; GEORGE E. SWETT, George E. Swett Co.; ED HOUGH, Hough & Egbert; EDW. J. SCHNEIDER, Moore Dry Dock Co.; M. A. CREMER, Marine Exchange and JOHN PARKER, American Marine Paint Co. Others joined the committee later.



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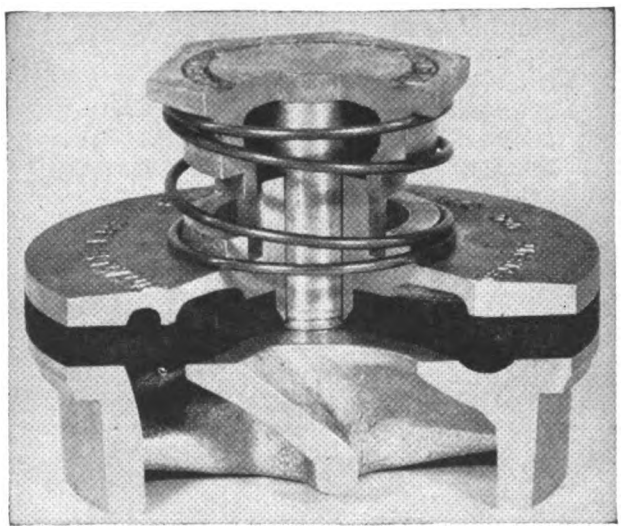
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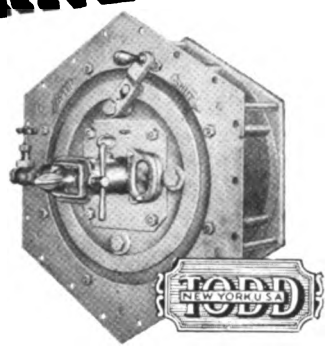
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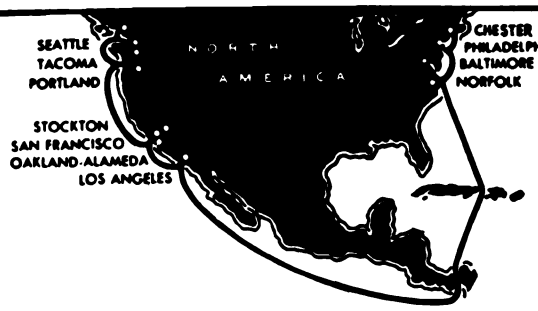
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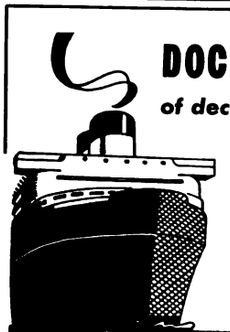
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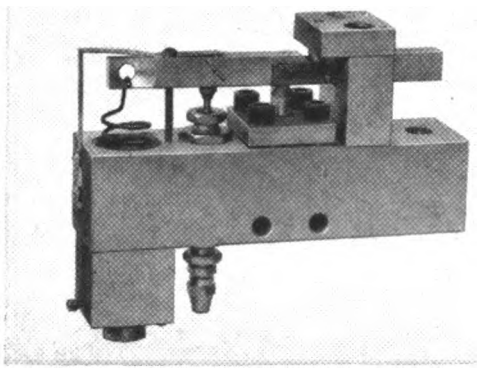
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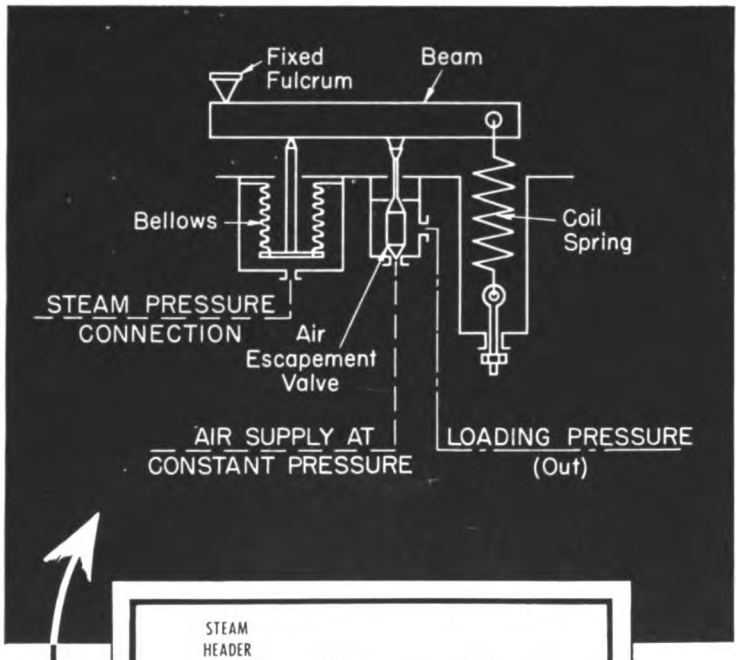
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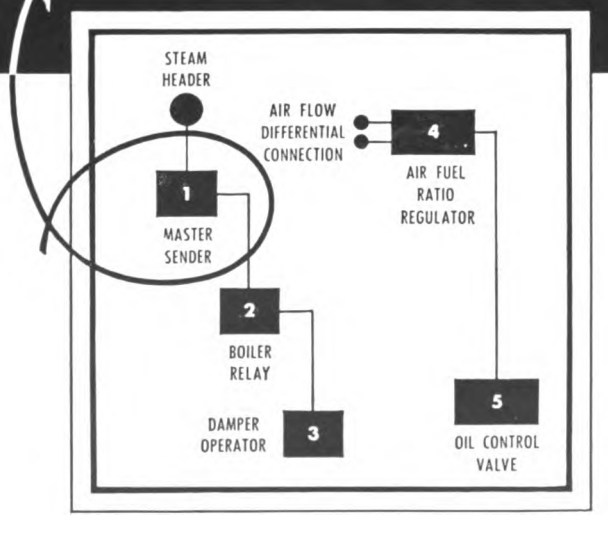
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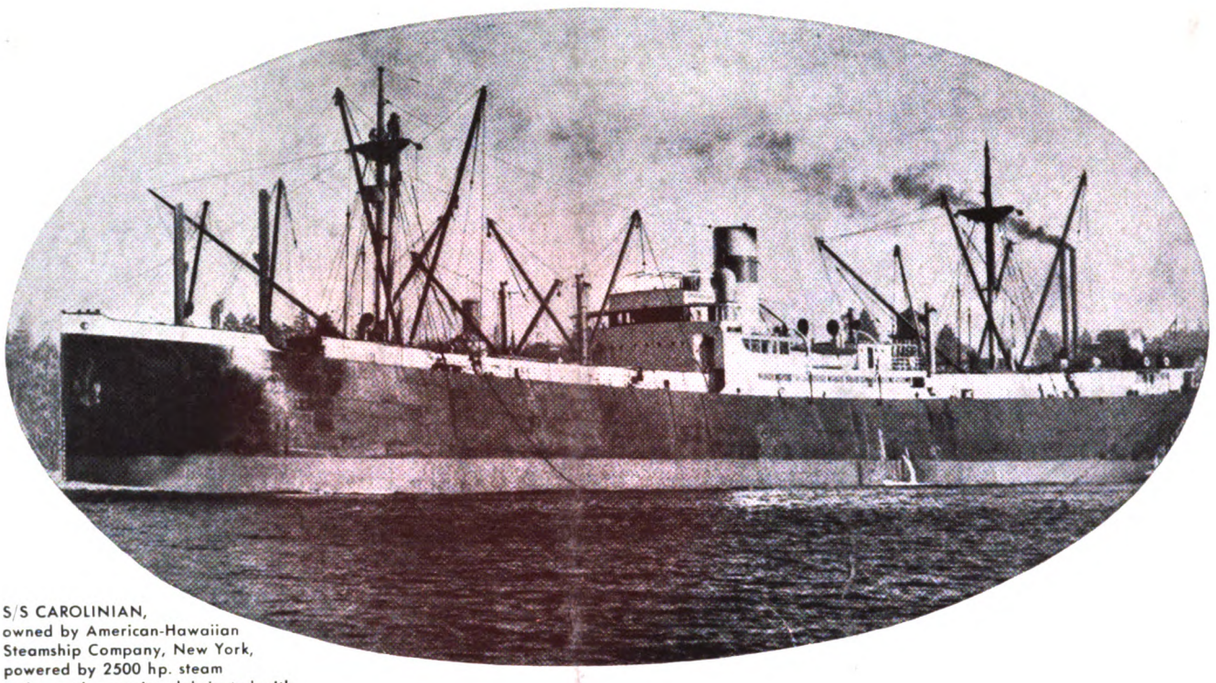
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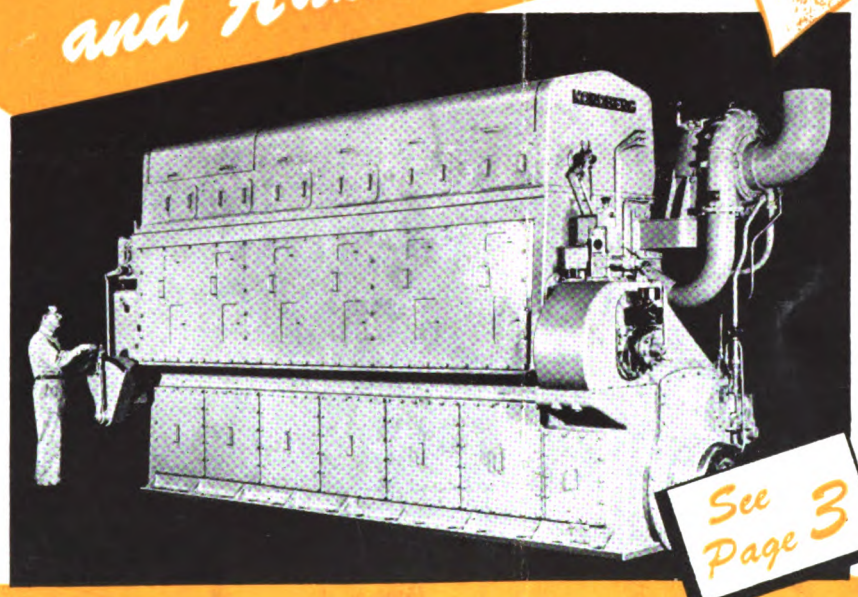
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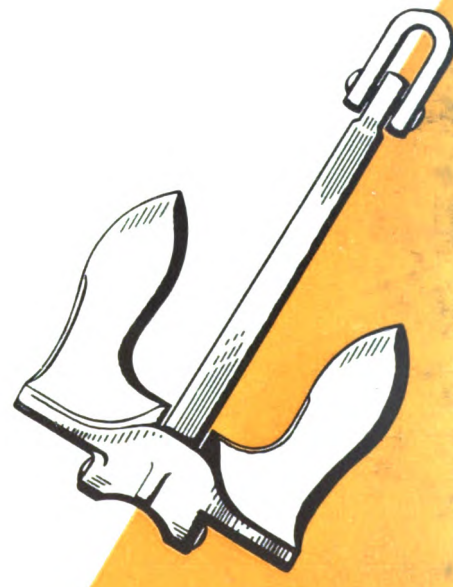
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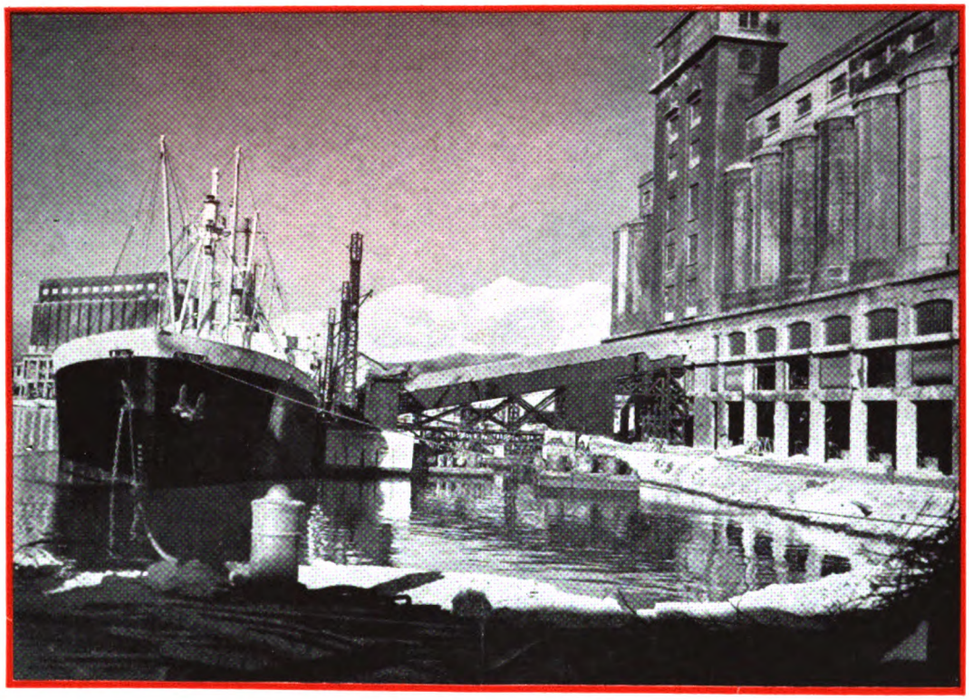
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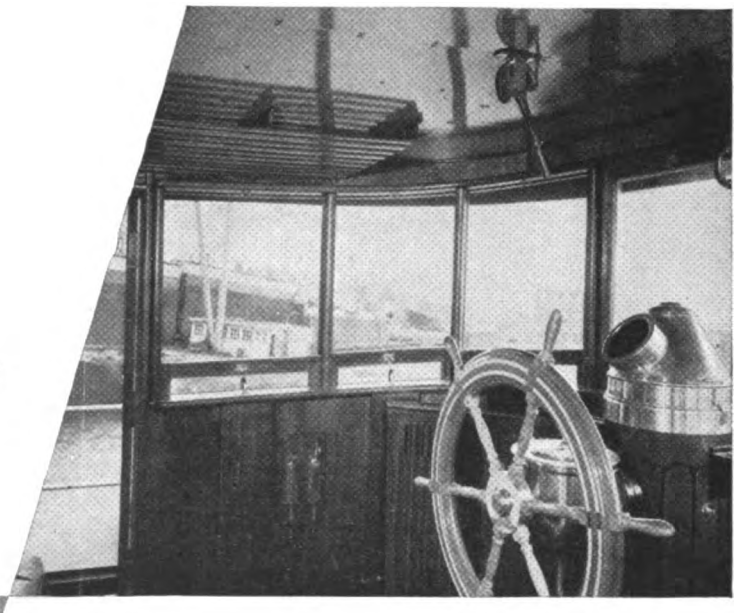
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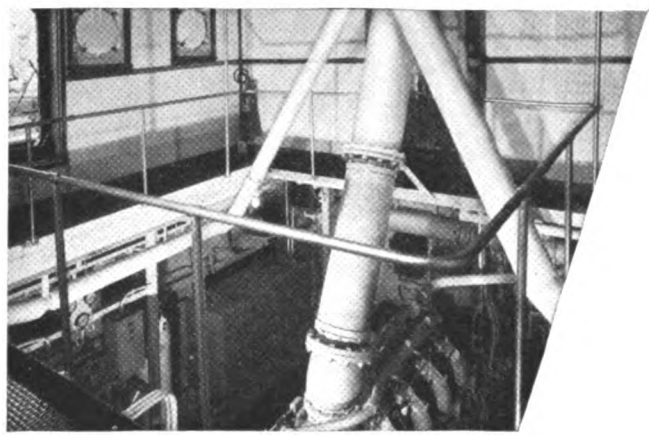
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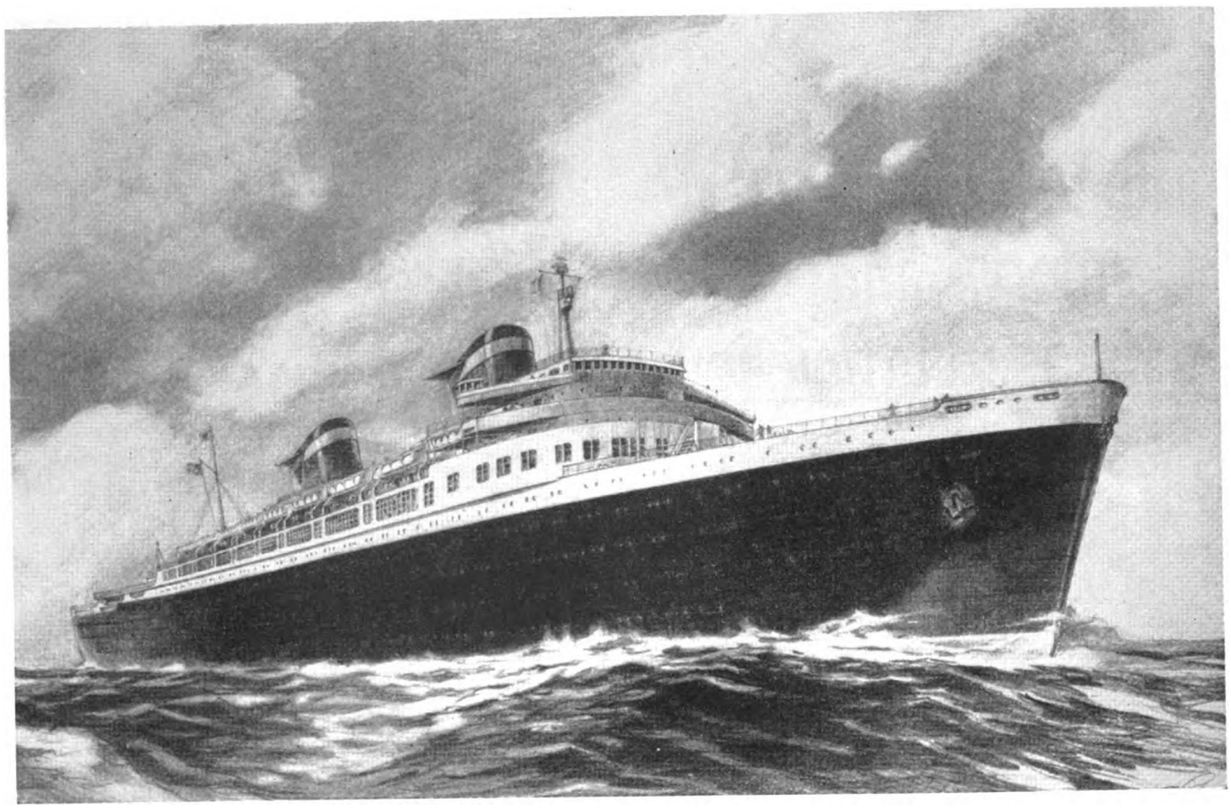
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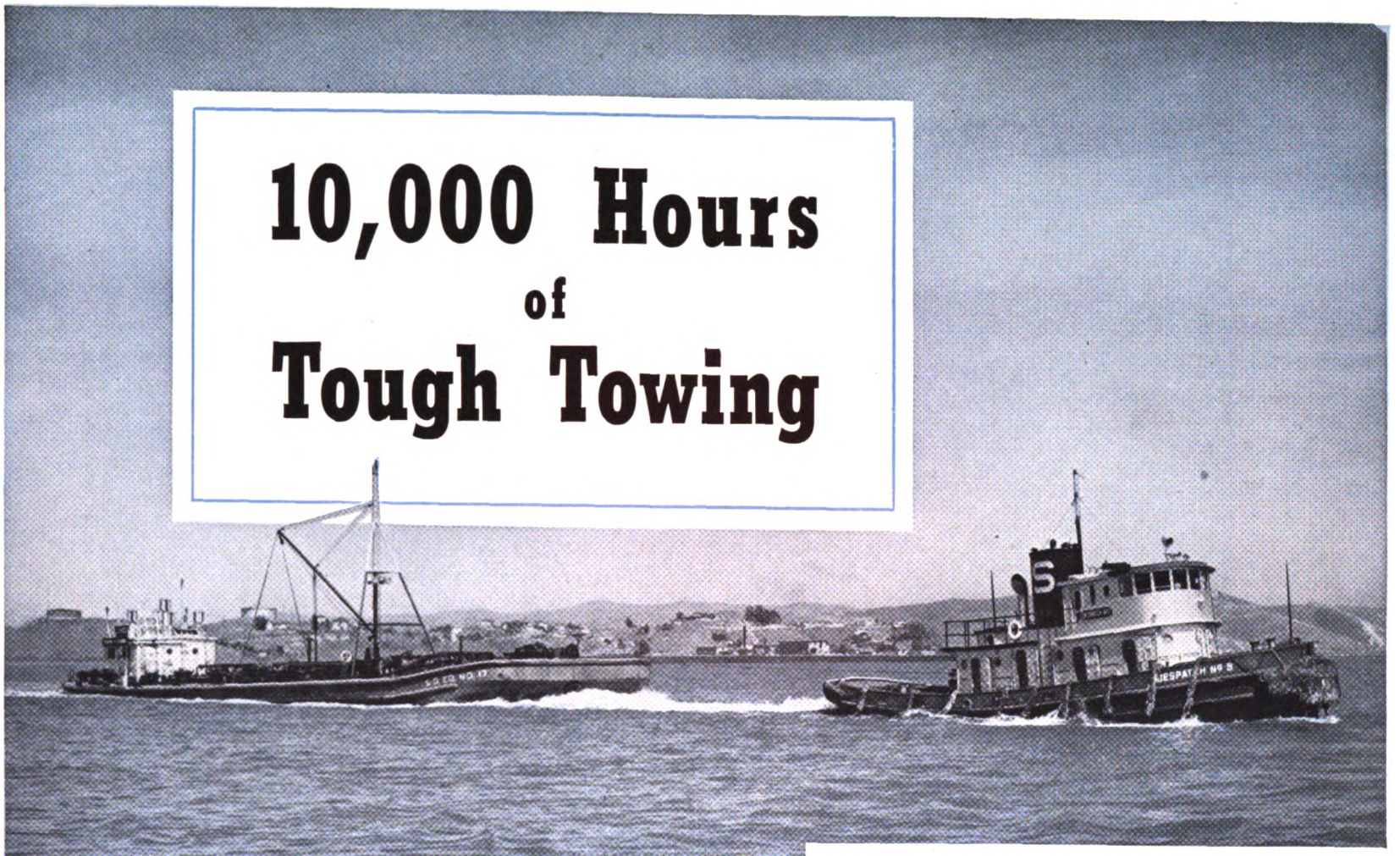
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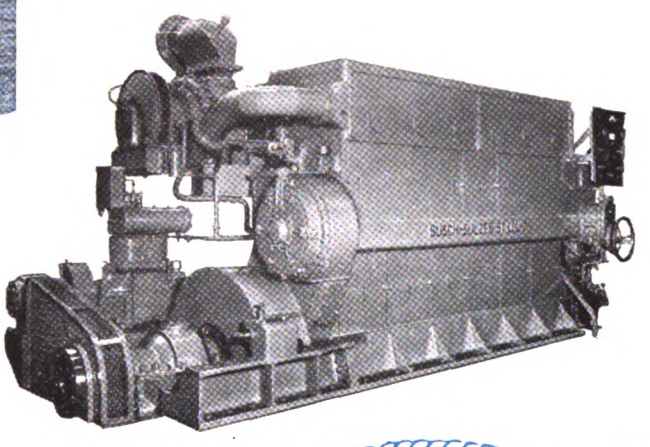
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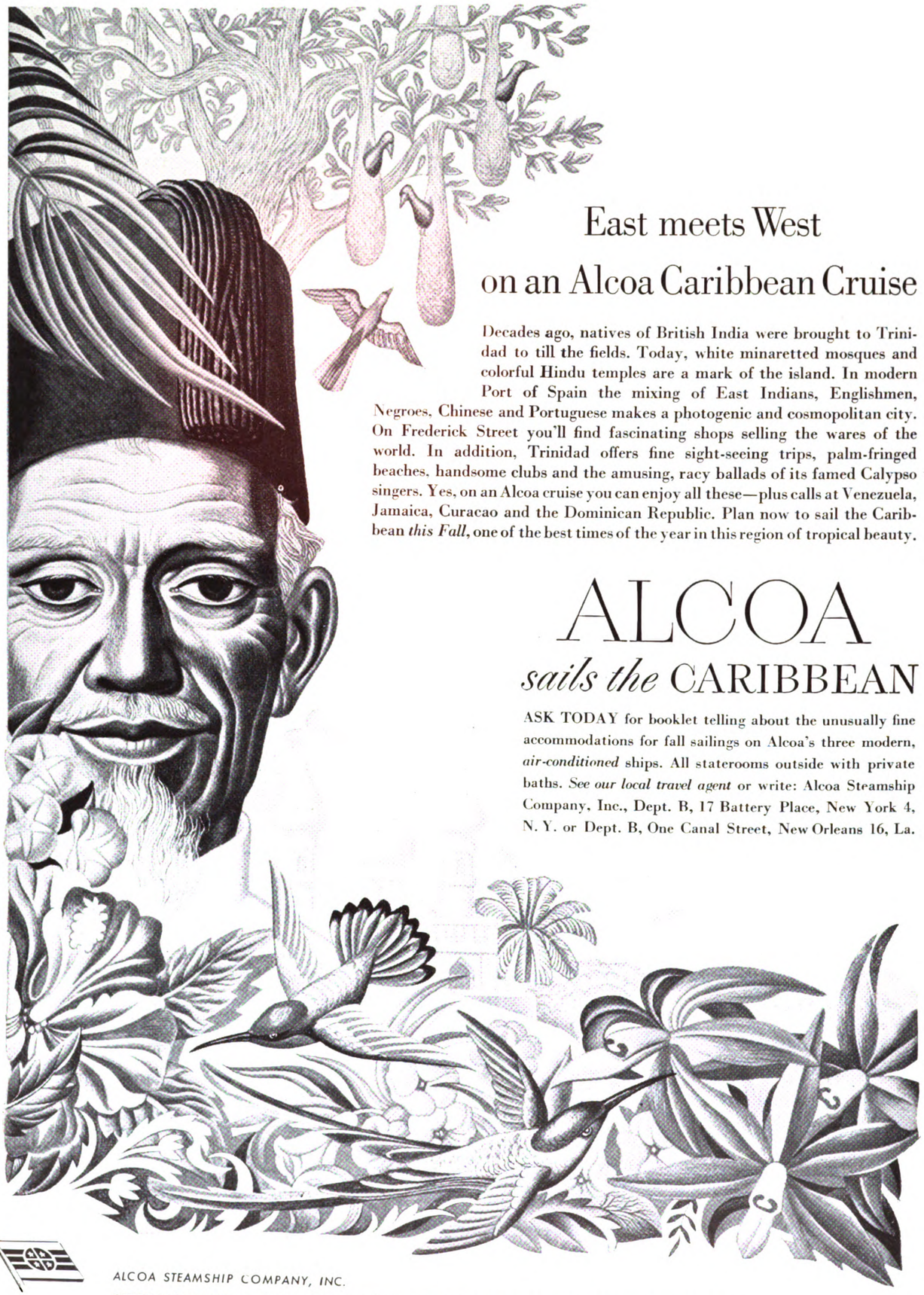
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This advertisement in leading magazines is helping to acquaint the public with the excellent freight and travel facilities now offered by ships of the American Merchant Marine.

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Liquid SOOTOUT

T. M. REG. U. S. PAT. OFF.

the PIONEER is still the LEADER

The *Original* Dual Fuel Oil Treatment that gives *Constant Cleaning Action* from Tank to Stack . . .

Liquid SOOTOUT *leadership* has been steadily maintained by *outstandingly superior performance.* It is the modern successor to the old powder type fireside treatments and sludge solvents. Its superiority is recognized generally by marine men *who judge a product on the basis of actual performance.*

Liquid SOOTOUT was the *first* to pioneer in what has become a highly competitive field. *Today*, as in the past, it is providing double cleaning action from tank to stack with *less cost* and *less labor.* It is on this basis of *actual superior performance* that Liquid SOOTOUT has maintained its *leadership over all imitators.*

Double Cleaning Action

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid. When applied to fuel oil in proper proportion, Liquid SOOTOUT disperses condensation and sludge forming elements, and reduces strainer, preheater and nozzle maintenance.

FOR FIRESIDE — Liquid SOOTOUT removes carbon scale and slag in combustion areas. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.



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Baltimore, Maryland, The Terminal Warehouse Co.
*Boston, Massachusetts, Howard C. Burke, Inc.
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*Brooklyn, New York, Monitor Machinery Corp.
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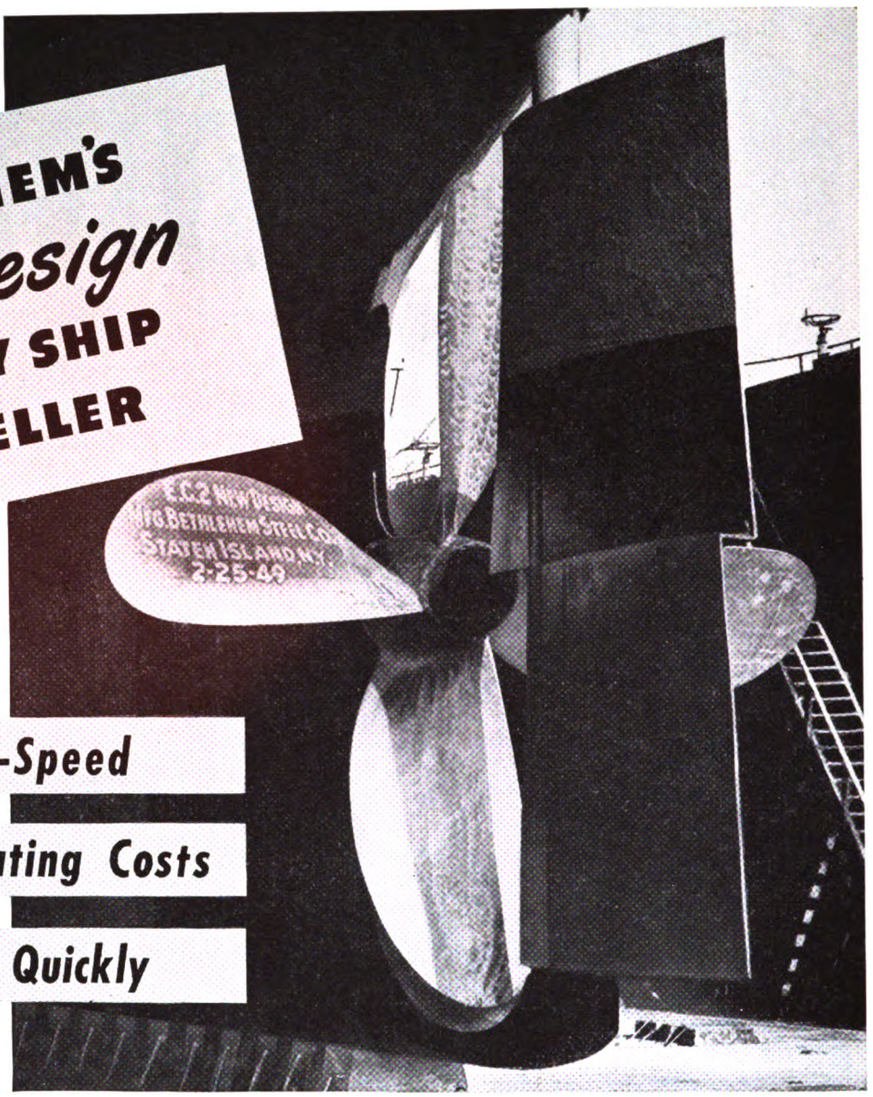
*Emergency Stock

LUBAID CO., Milwaukee 1, Wisconsin
New York Sales Office, 149 Broadway, New York City

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BETHLEHEM'S *New Design* LIBERTY SHIP PROPELLER



1. *Increases Sea-Speed*

2. *Reduces Operating Costs*

3. *Pays for Itself Quickly*

Bethlehem's new-design Liberty propeller, now in service on more than 100 Liberty ships, can help you regain at 66 R.P.M.—the engine speed recommended to prevent tailshaft failures—all (and often more than) the sea-speed lost with the old-type propeller.

Actual service reports of the first year's operations of this amazingly efficient propeller show an average sea-speed gain of better than 10 per cent. Some operators say it has paid for itself on a single voyage in *time, fuel economy* and *lowered engine-room maintenance costs.*

This Liberty propeller is just one example of Bethlehem's success in improving the efficiency of ship propellers *of all types and sizes.*

Your inquiries are invited.

Special

MARINE PRODUCTS

Geared Turbine Propelling Machinery • Turbine Rotors, Blading and Accessories • Diesel and Steam Engine Parts • Crankshafts, Line and Propeller Shafts • Propellers—Bronze, Iron and Steel • Low Pressure Single Effect Distilling Plants • Oil and Water Separators • Special Valves and Fittings • Stern Frames, Stern Tubes and Rudders • Riveted or Welded Steel Barges (knocked down for shipment) • Bronze, Iron and Steel Castings.

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BETHLEHEM STEEL COMPANY

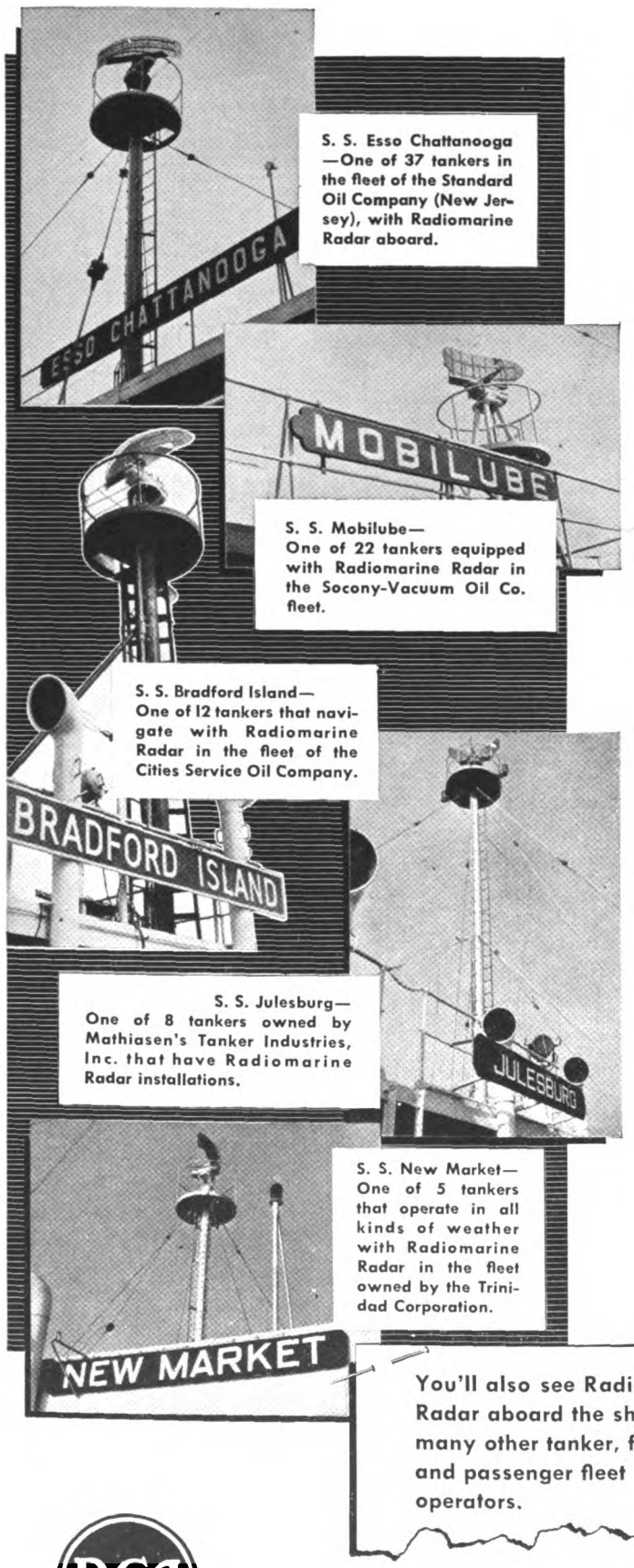
Shipbuilding Division

GENERAL OFFICES: 25 BROADWAY, NEW YORK 4, N. Y.



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TANKER FLEETS speed oil deliveries with the aid of RADIOMARINE 3.2 cm Radar



S. S. Esso Chattanooga—One of 37 tankers in the fleet of the Standard Oil Company (New Jersey), with Radiomarine Radar aboard.

S. S. Mobilube—One of 22 tankers equipped with Radiomarine Radar in the Socony-Vacuum Oil Co. fleet.

S. S. Bradford Island—One of 12 tankers that navigate with Radiomarine Radar in the fleet of the Cities Service Oil Company.

S. S. Julesburg—One of 8 tankers owned by Mathiasen's Tanker Industries, Inc. that have Radiomarine Radar installations.

S. S. New Market—One of 5 tankers that operate in all kinds of weather with Radiomarine Radar in the fleet owned by the Trinidad Corporation.

You'll also see Radiomarine Radar aboard the ships of many other tanker, freighter and passenger fleet operators.

BUSINESSMEN in a position to know—fleet operators of the nation's leading tankers—buy Radiomarine's Radar because it is a profitable investment for their ships.

Tankers and other vessels equipped with Radiomarine Radar make faster "turn arounds," proceed at maximum safe speed through storms, fog and darkness. They maintain regular schedules . . . enter or leave port safely . . . expedite oil deliveries . . . operate at lower costs.

Radiomarine's Radar has a fine reputation for dependability and high-quality performance as a navigational aid for pilotage . . . position finding . . . anti-collision . . . storm detection.

Radiomarine renders a competent maintenance, repair and inspection service on marine electronic apparatus—including radiotelegraph, radiotelephone, loran and radar. The work is done by factory-trained technicians in 29 service stations at the principal ports of the United States. Service is also available in foreign ports through Radiomarine's world-wide affiliates. Send for more complete details today.

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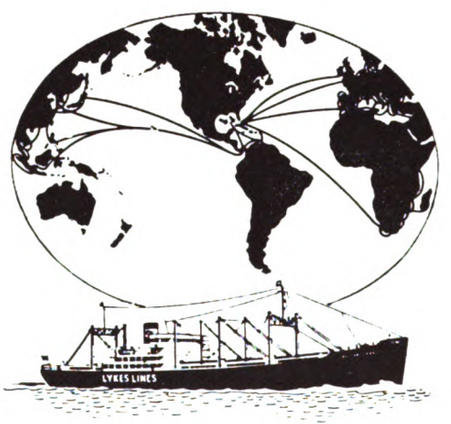
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LYKES LINES

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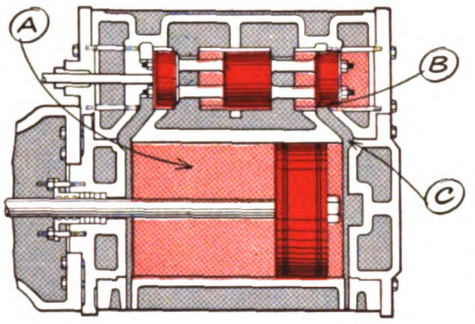
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OFFICES AND AGENTS IN PRINCIPAL WORLD PORTS

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Case 1140—Meeting All Steam Engine Lubrication Conditions



STEAM ENGINE CYLINDER AND VALVE

In a group of steam engines of various types, Calol Cylinder Oils provided maximum lubrication efficiency in each one. The long list in this line includes oils with the special combination of properties to meet all different conditions of steam engine pressure, temperature and moisture. In addition, each has several general attributes that assure economical operation.

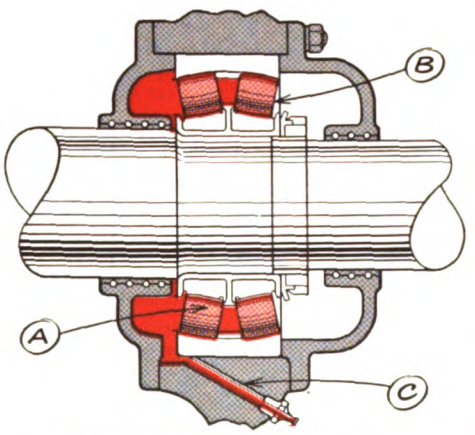
A. Good adhesion to surfaces reduces wear, prevents dry spots, scoring, and minimizes corrosion.

B. Minimum carbon formation—assured by use of selected oil stocks of proper characteristics.

C. Proper atomization and good dispersion of oil in steam—provided by correct viscosities.

To further meet various conditions, each Calol Cylinder Oil is suitable for use in a considerable range of steam temperatures and steam pressures and several choices are provided for each basic type of service.

Case 1150—Reducing Power Loss in Electric Motor Bearings



ELECTRIC MOTOR ROLLER BEARING

In an anti-friction bearing operated 528 hours at 10,000 rpm, and a temperature of 200° F., Calol Grease BRB-340 kept bearing surfaces in good condition and showed no sign of separation. Recommended for all anti-friction bearings, but particularly for electric motor bearings where speeds are high.

A. Softens to oil-like consistency around moving rollers and balls, but resets quickly when swept to sides maintaining tight outer grease seal—reduces frictional loss to the minimum and loss of lubricant.

B. Resists extreme temperatures and deterioration and is chemically neutral — promotes economy through long use without harm to bearing parts.

C. Soft, smooth, fibrous texture — reduces starting torque, provides easy pumping from grease guns.

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STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush St., San Francisco 20, California.

CALOL

FOR EVERY NEED A STANDARD OF CALIFORNIA JOB-PROVED PRODUCT

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...to 66 Modern Vessels Flying the Waterman Flag

The S.S. "Topa Topa" is one of Waterman Steamship Corporation's great fleet of modern dry cargo C-2 type vessels that ply the trade routes of the world. Built in 1945 at the Gulf Shipbuilding Corporation, Mobile, the S. S. "Topa Topa" is typical of Waterman's specially designed cargo vessels which accommodate 12 passengers.

Waterman serves the United Kingdom, North European ports, the Mediterranean, Gulf and Pacific ports, the Far East, and Puerto Rico. Waterman's subsidiary, the Pan-Atlantic Steamship Corporation, as well as its affiliate, the Arrow Line, serves U. S. coastwise and inter-coastal trade.

NO-OX-ID Rust Preventives protect areas between steel and wood decking, coffer dams, rigging, steel bulk heads in refrigerated spaces, etc., on all Waterman owned ships. Dearborn Boiler Water Treatment is used on a large number of the ships of the fleet.

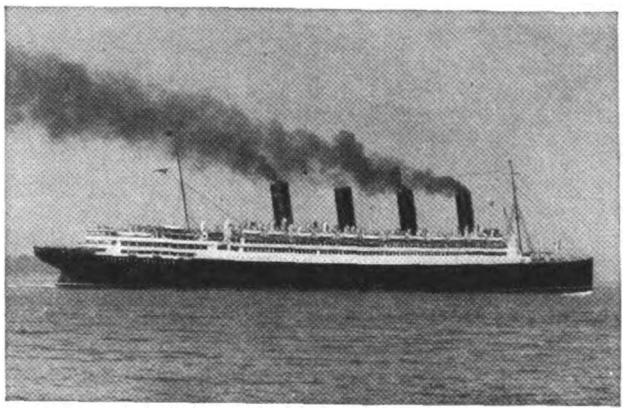
Dearborn

THE LEADER IN BOILER WATER TREATMENT AND RUST PREVENTIVES

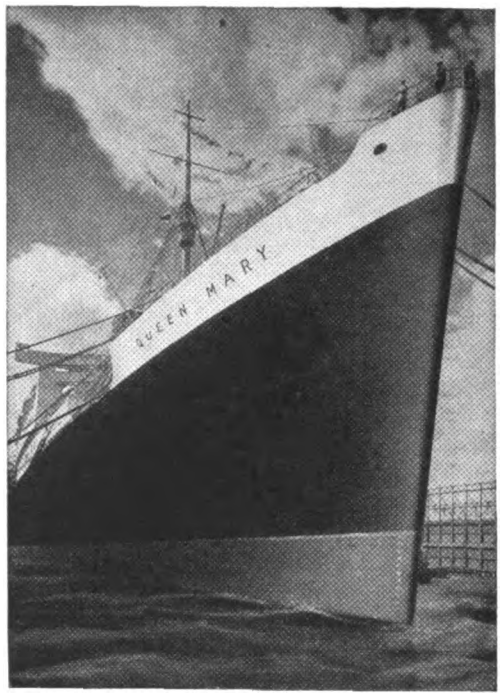
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WATER TREATMENT AND ENGINEERING SERVICE
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1919—THE AQUITANIA



1949—THE "QUEENS"

30 YEARS OF SPERRY NAVIGATION

SPERRY equipment has "gone to sea" on Cunard liners for 30 years. This record of Sperry service to Cunard extends from its first Gyro-Compass installation in 1919 aboard the Aquitania to the present day "Queens" of the fleet — the Queen Mary and Queen Elizabeth.



Now . . . besides the Gyro-Compass for true north indication and the Gyro-Pilot for efficient steering, the world's two largest passenger ships have added the new *Sperry Direct-Reading Loran* as a further aid to navigation.

Sperry Loran provides the means of obtaining instantaneous fixes regardless of overcast, fog or darkness continuously across the Atlantic, thus avoiding costly course corrections. This is an important factor to these liners because of their fast cruising speed.

In addition to the excellent navigational data provided, personnel on these vessels like the simple and fast operation possible with Sperry Direct-Reading Loran . . . its adjustable angle for viewing the scope . . . ease in servicing . . . and small space required in the chart room. And Loran, like other Sperry equipment, is backed by fast, dependable Sperry service in New York and in Southampton through The Sperry Gyroscope Company, Ltd. of London.

Sperry's 30 years' association with Cunard is another indication of its world-wide acceptance as a pioneer and leader in the development of marine navigational equipment.

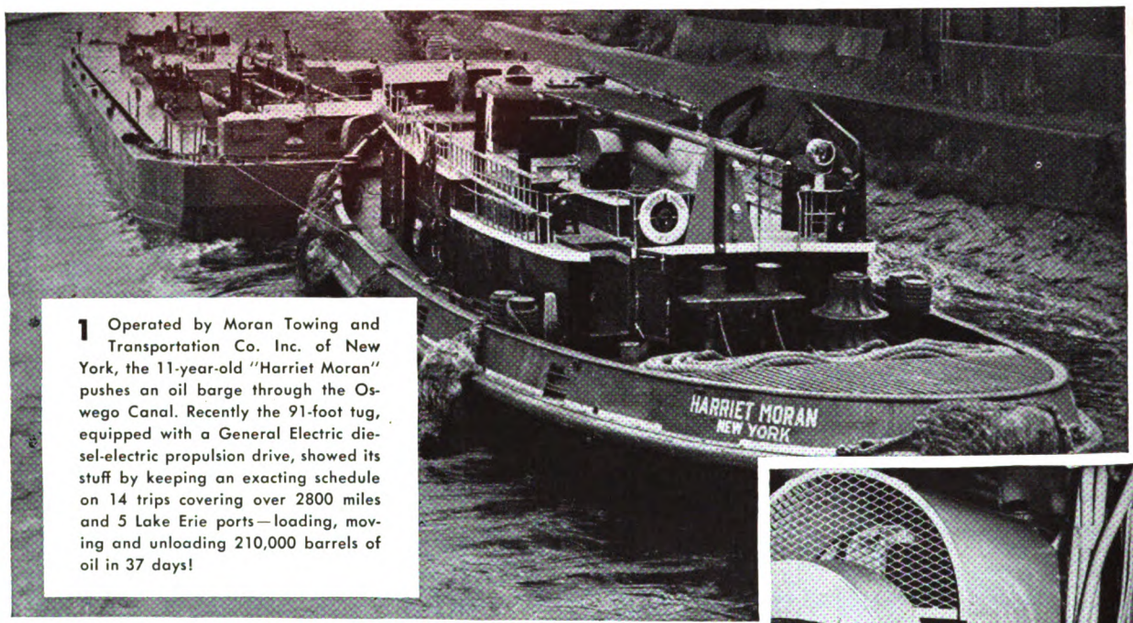
SPERRY GYROSCOPE COMPANY
DIVISION OF THE SPERRY CORPORATION
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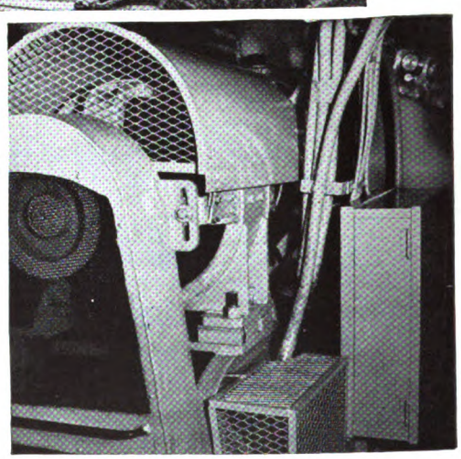
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MORAN TUG KEEPS 2800 MILES IN 37

Dependable General Electric diesel-electric propulsion drive helps veteran "Harriet Moran" shuttle oil barges with time-table regularity—provides fast, accurate maneuverability needed for crowded harbors and lake ports



1 Operated by Moran Towing and Transportation Co. Inc. of New York, the 11-year-old "Harriet Moran" pushes an oil barge through the Oswego Canal. Recently the 91-foot tug, equipped with a General Electric diesel-electric propulsion drive, showed its stuff by keeping an exacting schedule on 14 trips covering over 2800 miles and 5 Lake Erie ports—loading, moving and unloading 210,000 barrels of oil in 37 days!



2 In service since 1938, the "Harriet Moran" spent several years in the Navy. Despite this extra-heavy service, its G-E equipment has required only routine maintenance during the regular annual overhaul of all Moran tugs. Here is one of two 400-kw G-E generators with its 24-kw exciter-generator in the engine room, with switch panel at right. Either one or both generators can be used, for reduced or full-speed operation.

GE

PROPULSION DRIVES

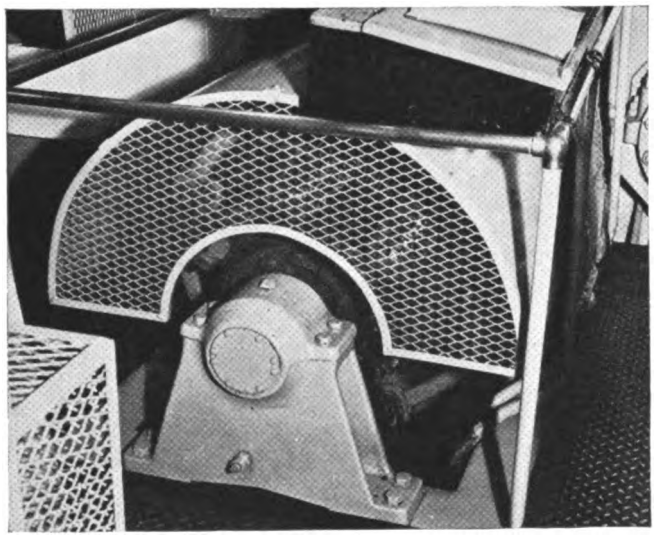
DIESEL-ELECTRIC TURBINE-ELECTRIC
GEARED-TURBINE

MARINE AUXILIARIES

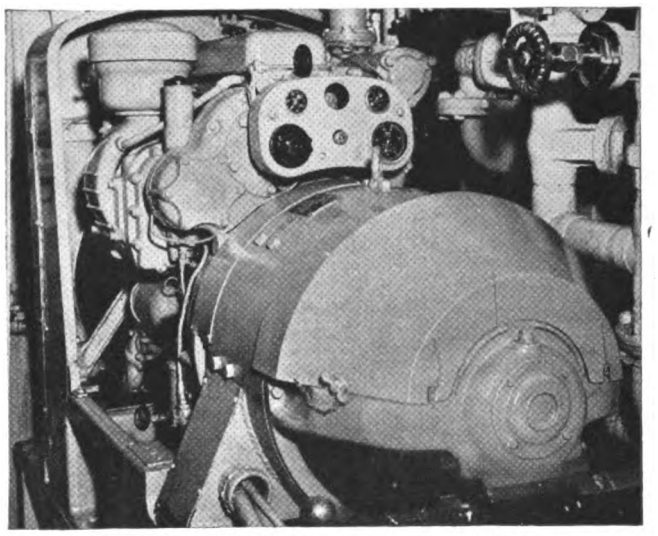
and KEEP 'EM SAILING SERVICE

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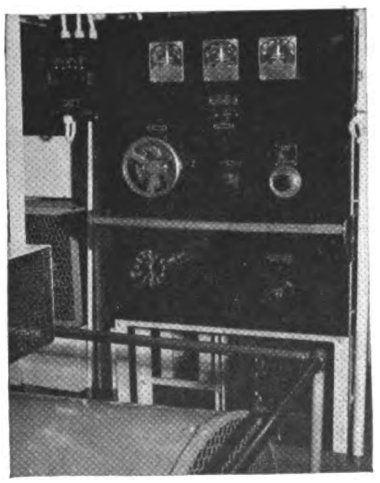
HEAVY SCHEDULE—
DAYS ON 14 TRIPS!



3 G-E diesel-electric drive permits use of compact propulsion motors, connected to the propeller shaft either directly or through gearing. This G-E d-c motor, one of two 500-hp motors on the tug, uses a reduction gear. Another advantage of this type of drive is the wide latitude it allows in arranging machinery. This makes for efficient use of limited engine-room area, saves valuable deck and cargo space.



4 This 30-kw G-E engine-driven generator is used in the "Harriet Moran" as a standby source of power for lighting and auxiliaries. A wealth of auxiliary power is available with G-E diesel-electric drive because the main generators, too, constitute a universal power plant when a ship is standing by or in port.



5 Operation of the tug's propulsion generators and motors is centralized in this G-E control panel in the engine room. The main handwheel operates a controller that determines the direction and speed of the tug. Flexible control and quick reversal in a G-E diesel-electric drive make for rapid maneuvering, important for vessels operating in crowded waters.



6 The tug may be operated either from the engine room or from one of three control pedestals similar to this, located at pilot house, bridge and after deck. For full information on diesel-electric and other types of marine propulsion and auxiliaries, as well as the cost-saving Keep 'Em Sailing Service, check with your G-E representative. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

You can put your confidence in—

—GENERAL ELECTRIC—

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Keel-to-truck service at TODD, Los Angeles

Anything a vessel needs, from routine overhaul to major repairs, can be obtained, quickly and expertly, at Todd's Los Angeles yard, with its 5 wharves—2 dry docks (of 10,000 and 18,000 ton capacities)—2¾ miles of industrial track—52 buildings housing up-to-date shops, utilities and offices.



• View of Todd's Los Angeles Division, conveniently located at the head of the main San Pedro Channel of Los Angeles Harbor.

OVER whatever sea route a vessel approaches the coasts of the United States, she will find a modernly equipped Todd Shipyard at a nearby port. Wharves, dry docks, shops, materials—all are ready for quick, efficient action. In addition, staffs of marine architects, engineers and other specialists are on hand, prepared to work alone or with an operator's consultants. Whether *your* vessel needs minor repairs or thorough-going "modernization," call on Todd.... *Mobile service is also available at anchor or at dockside.*



• Weld inspection by Gamma-Ray Radiography—modern technique in use at Todd yards—records internal cracks or cavities on film.

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This heavy duty lubricating oil

E·X·T·E·N·D·S

Time between overhauls

SHELL TALONA OIL

FOR ALL YOUR HEAVY DUTY ENGINES

SHELL

Because it's fortified against ***ALL*** the inside causes of reduced engine life

To add hundreds of extra hours to the previous running time between engine overhauls . . . yes, Shell scientists aimed high when they started to develop a new heavy duty oil. They knew that such an oil must overcome not just some of, but *all* the inside causes of reduced engine life: sludge . . . carbon . . . lacquer . . . acids . . . and their end-product, wear.

To make a long story short — and sweet — Shell scientists found a formula that made even their original ambitious goal seem modest: Shell Talona Oil.

In all types of heavy duty, high speed engines — both gasoline and Diesel — Shell Talona Oil has surpassed every accepted standard for heavy duty oils. It has kept sludge to a harmless minimum; protected alloy bearings from corrosion; left pistons and rings virtually free of carbon and lacquer; kept wear so small it was hard to measure. All to the end of keeping such engines going longer . . . and more efficiently.

Why don't you find out what Shell Talona Oil can do for your heavy-duty equipment?

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for 50 years

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★

A half century of Caribbean service underscores today's function of the Great White Fleet. Here are fast, fully-refrigerated cargo and passenger vessels—modern and spotless—fit, willing and able to serve shippers and travellers in Inter-American trade. Competent staffs, afloat and ashore, and modern equipment and facilities are yours to command.

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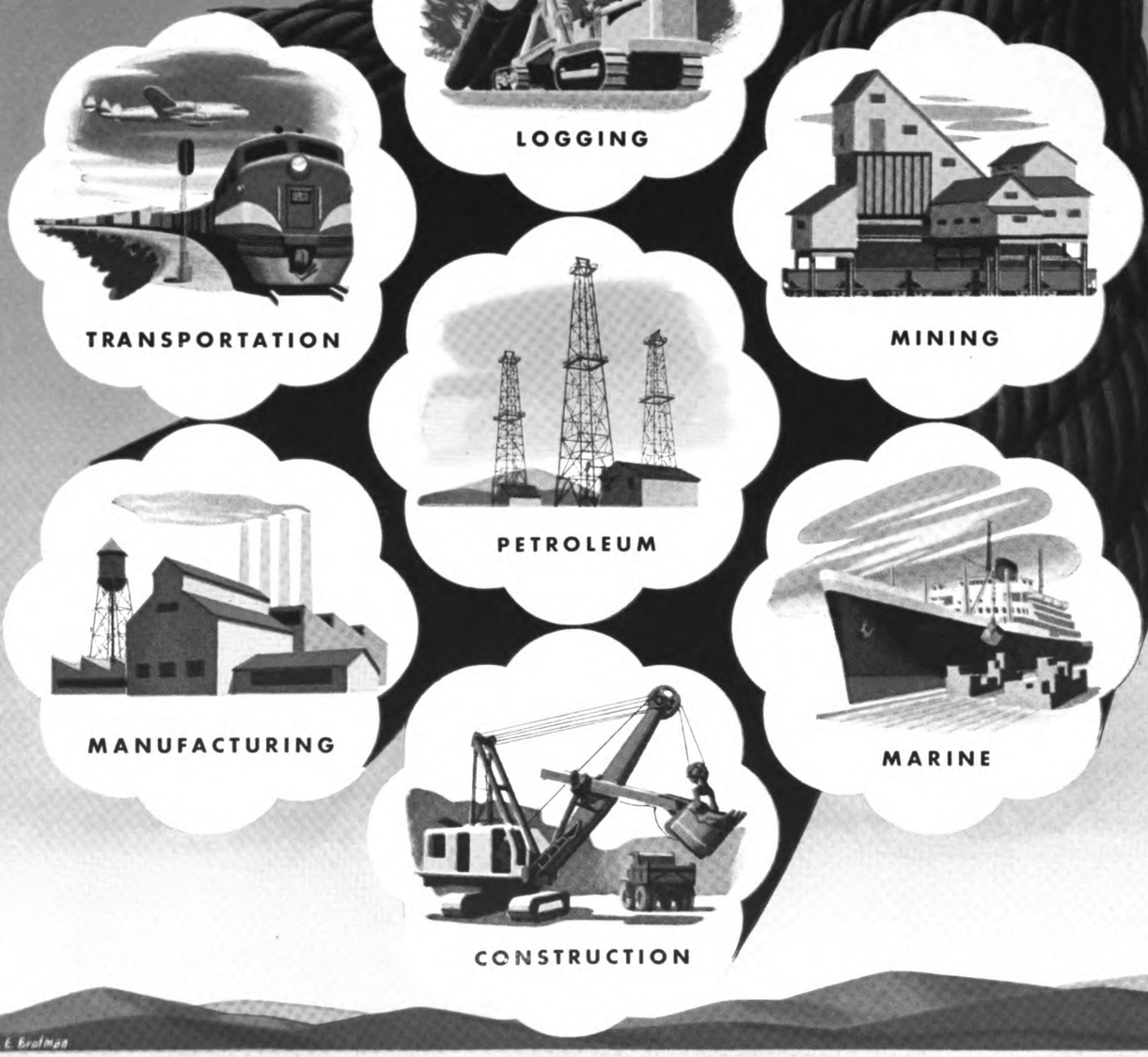
WICKWIRE ROPE

A PRODUCT OF CF&I

Ask any user . . . you'll find them everywhere

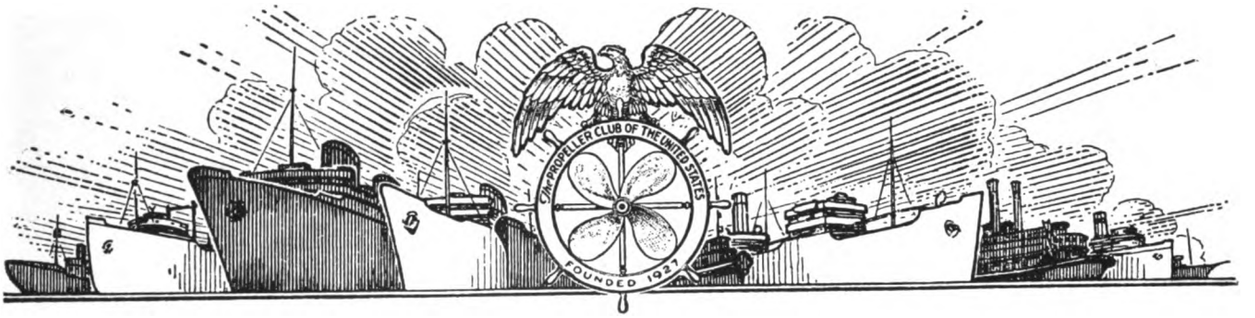
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IN THE ROCKIES—The Colorado Fuel and Iron Corp.
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Reqnirements and Responsibilities of American Shipping

THE American Merchant Marine Conference, sponsored by The Propeller Club of the United States in conjunction with its Twenty-Third Annual Convention, will be held in New York, October 19, 20 and 21st, 1949.

The Conference theme will be "Requirements and Responsibilities of American Shipping." Problems of vital concern to the American Marine Industry growing out of the period of world reconstruction and the rehabilitation of our domestic and foreign trade will be presented and discussed by recognized authorities. The Conference will concentrate the experience and wisdom of outstanding leadership upon subjects of utmost importance affecting the future of the American Merchant Marine.

Panel Discussion meetings will be held on October 19, 20 and 21st; the joint Convention-Conference Luncheon on Thursday, October 20th; Propeller Club Convention Session on Friday, October 21st; and on the evening of that date, the annual American Merchant Marine Conference Banquet.

The necessity for constructive and coordinated effort is more apparent today than ever before. . . Your cooperation and participation are needed in this program to foster the best interests of the American Merchant Marine as an essential factor in the national defense and our economic welfare. . . Arrange now to attend the American Merchant Marine Conference and to take part in this important annual gathering of the American Marine Industry.

AMERICAN MERCHANT MARINE CONFERENCE

THE WALDORF-ASTORIA — NEW YORK

October 19, 20 and 21st, 1949

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National Headquarters

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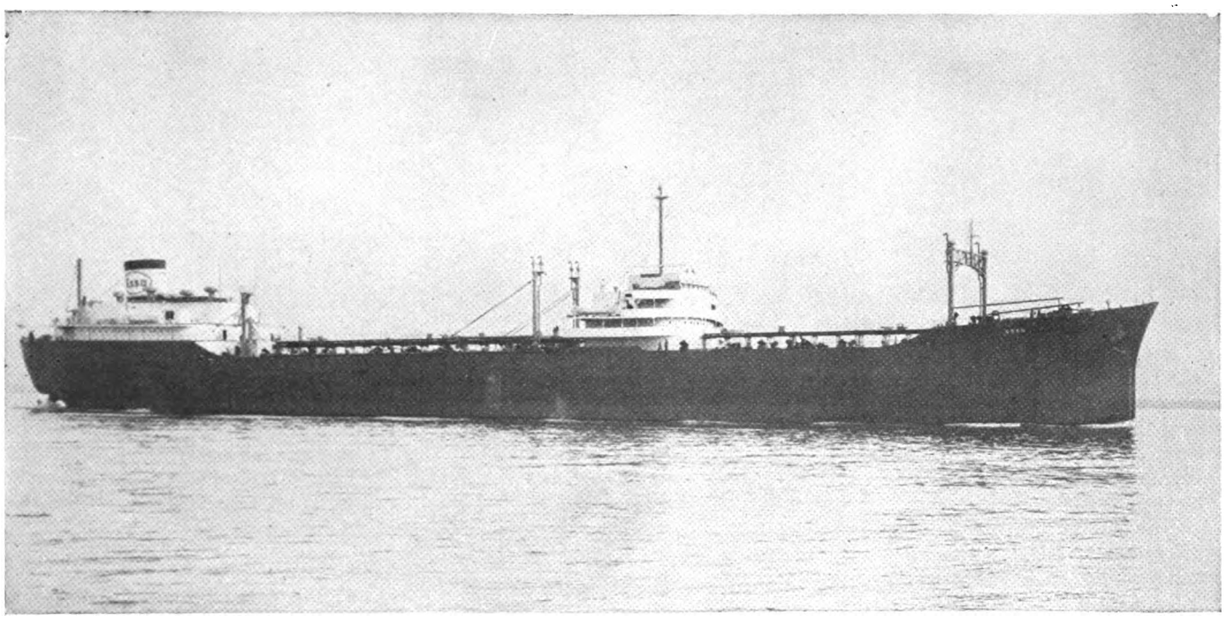
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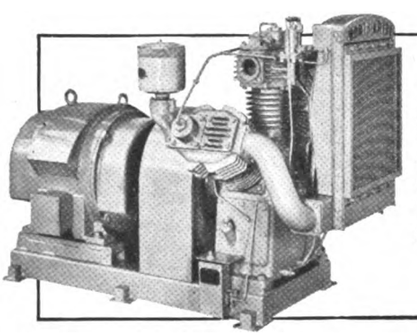


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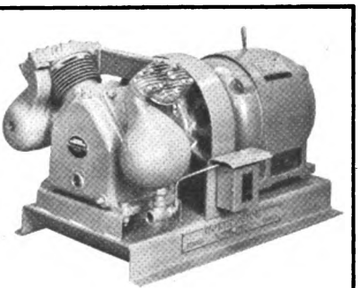
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Worthington's many years of Marine experience have been built into these vital auxiliaries which give daily proof that *there's more worth in Worthington*. Consult with Worthington's Marine engineers to solve your shipboard Air Compressor problems by contacting *Worthington Pump and Machinery Corporation, Marine Division, Harrison, N. J.*



Worthington Soot Blower & Ship's Service Air Compressor Model V3A2 ... Size: $\frac{6}{6}$/5 x 5 in. 110 cfm actual . . . 125# . . . 30 hp . . . 870 rpm.



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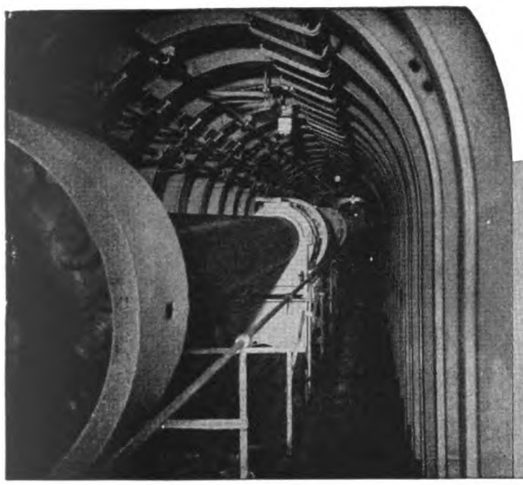
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SHAFT ALLEY Chatter

Alexander Ship Bids to Be Opened Sept. 26th

United States Maritime Commission has set September 26th as the date for the opening of bids for construction of two 25-knot 17,940-ton passenger-trailership type vessels for the Pacific Coast Steamship Co. to operate in overnight service between Long Beach and San Francisco. Plans and specifications were sent to thirteen shipyards, east and west, but not all are expected to bid.

Pacific Coast Steamship Company is headed by H. F. Alexander, veteran West Coast steamship operator, who is both president and chairman of the board. The operation will be known as the Alexander Line.

Other officers are: Former Congressman Willis W. Bradley, a retired Navy captain, Long Beach, executive assistant to the president; D. Dwight Douglas, Detroit, another retired Navy captain and Great Lakes shipping operator, vice chairman and director; Captain Lebbeus Curtis, formerly of the San Francisco firm of Pillsbury & Curtis, vice president and general manager; Edward H. Clark, San Francisco, treasurer and director of the Pacific Vegetable Oil Co. and former director of the American Trust Co., treasurer and director; Farman P. Griffith, San Francisco attorney with McCutchen, Olney, Mannon & Greene, director and counsel, and Wallace L. Ware, Los Angeles, director and special counsel.

Extensive terminals are being planned by the harbor authorities at Long Beach and San Francisco, the former to be located at the outer end of Pier A and the latter at Pier 18.

Mr. Alexander was on the West Coast in August and announced plans were being shaped for the organization of the Atlantic Coast Steamship Company, a Delaware corporation, to operate five similar vessels to carry trucks, trailers, passenger cars and passengers overnight between New York and Providence, R. I. and Norfolk, Va. Eventually, too, he plans to operate between San Francisco and Seattle. It is contemplated Pier 16 at San Francisco will be used for this northwest service.

Formerly Mr. Alexander headed the old Pacific Coast Steamship Co., which operated as the Admiral Line between Pacific Coast ports. The names of two of his former ships, the ss H. F. ALEXANDER and RUTH ALEXANDER, have been given these two new vessels.

The cost of each of these new vessels will be around $7,500,000 and the United Maritime Commission is underwriting 87½% of this amount. The balance of the financing will be handled by Lester & Co., a Los Angeles investment house, Mr. Alexander says, and a public stock subscription offer may be made.

Officers of the Alexander Line say it is hoped keels for the two California ships will be laid by the end of 1949 and the service will be inaugurated before the end of 1950. It is explained that not all shipyards can bid because not all have building ways wide enough for the 90-foot width of the vessels.

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American Export Takes Delivery of Shepard Vessel

L. S. Andrews, operating manager American Export Lines, announced that his company had taken delivery from the Shepard Steamship Company of ss MINUTE MAN and renamed this vessel ss EXILONA, with Captain Harold E. Snow in command.

The EXILONA is one of four vessels recently purchased by the company from Shepard Steamship Company at a cost of $1,050,000 each and one to be used in the New York-Israeli service.

The four new vessels were originally built by Bethlehem Steel Company to American Export Lines' special "Exporter" design. They are 16½ knot freighters with 7 holds, and are equipped to handle all commodities including semi-perishable and refrigerated cargo. They are 473'1" in length, with a 66-foot beam, 9900 DWT, equipped with steam turbines driving single screws, and rated at 8800 horsepower.

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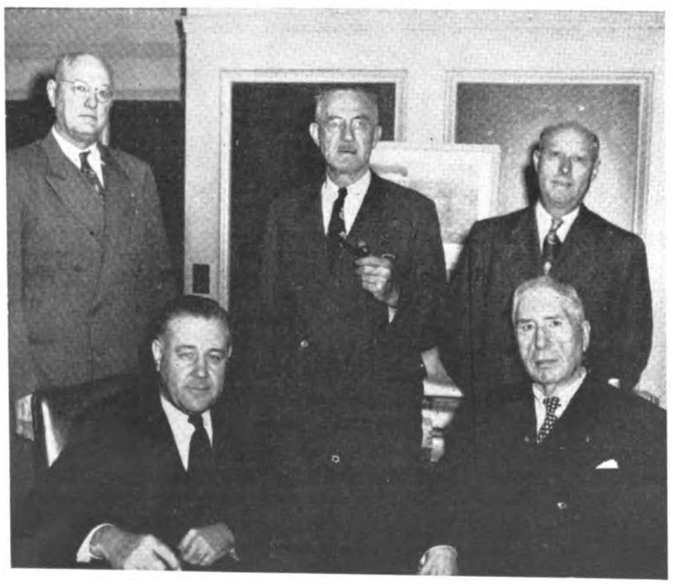
Pan-Atlantic Cuts Schedule From 7 Days to 48 Hours

The Pan-Atlantic Steamship Corporation, coastwise arm of the Waterman Steamship Corporation, announced the inauguration of a new service from Boston and New York to Jacksonville, Florida.

The Boston service started with a sailing on July 19th, and each Tuesday thereafter, and arrives in Jacksonville the following Sundays.

The New York to Jacksonville service started on July 22nd, cutting transit time from the old schedule from seven days to 48 hours. This service will prevail each Friday from New York.

Three modern Victory ships of the Pan-Atlantic fleet—the ss CANTON VICTORY, the ss GREELEY VICTORY and the ss BESSEMER VICTORY—will be placed in this new service.



DISCUSSING SAN FRANCISCO TERMINAL FOR ALEXANDER LINE—Seated, left to right: ROBERT W. WILEY, Manager of the Port of San Francisco and H. F. ALEXANDER, head of the Pacific Coast Steamship Co.; Standing: CAPTAIN W. W. BRADLEY, Assistant to Mr. Alexander; CAPTAIN LEBBEUS CURTIS, Vice President and General Manager and WILLIAM A. GEARY, Chief Wharfinger of the Port of San Francisco.

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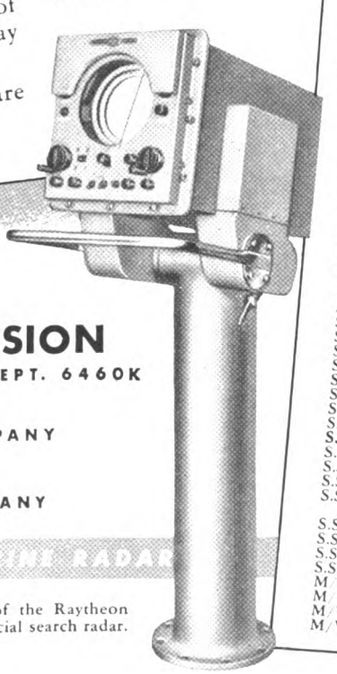
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SHAFT ALLEY (continued) Chatter



REGINALD C. WARNER . . . new Assistant Manager of Standard of California's Marine Department.

Warner Promoted by Standard of California

Appointment of Reginald C. Warner as assistant manager of its Marine Department was announced by the Standard Oil Company of California.

For many years a chief engineer on vessels of Standard's tanker fleet, Warner has more recently acted as inspector of operations and maintenance for the company's marine department.

During the last ten years he also has supervised construction, here and abroad, of tankers and petroleum barges for Standard and some of its subsidiary companies.

Warner joined Standard in 1921 as a first assistant engineer. In his new position he replaces A. E. Kihn, recently named manager of Standard's Marine Department.

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Moore-McCormack Offers New 11-Day Vacation Cruise

Plans for the expansion of the passenger service of Moore-McCormack Lines in its operation between the port of New York and South America were announced by Leo E. Archer, general passenger Traffic Manager of the Line, with the statement that effective with the sailing of the liner ARGENTINA, on August 25, the first stop southbound will be made at Port-of-Spain, Trinidad, in the British West Indies.

In order to provide this schedule, Mr. Archer said, the three passenger liners BRAZIL, URUGUAY and ARGENTINA will sail at 5 p.m. on Thursday instead of the same hour Friday, as heretofore. With this change the itinerary will be retained, with the first stop in South America at Rio de Janeiro, then Santos, Brazil; Montevideo, Uruguay, and Buenos Aires, Argentina. Northbound the ships will again stop at these ports, also at Port-of-Spain, the stop before arrival in New York.

Under the program, Moore-McCormack will offer an 11-day vacation trip, a week and a week-end, which will provide 4½ days at sea southbound to Port-of-Spain on these sailings of the three ships, with two days ashore, and the return trip northbound aboard the sister ship next scheduled to stop at the port northbound. This is expected to open an entirely new field of travel for the Moore-McCormack ships, which have been featuring the 38-day round trip. This round trip, will, of course, be retained.

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Alaska Steam Personnel Changes Announced

The appointment of H. K. Jones as purchasing agent of the Alaska Steamship Company has been announced by Admiral F. A. Zeusler, executive assistant to the president. He succeeds Robert Mooney, resigned. Jones joined the Alaska Line in 1943.

Simultaneously the retirement of W. C. Hubbard from the steward's department is announced. Joining the company in 1917 as pantryman, Hubbard rose to the position of port steward. He is succeeded by D. K. Jones. Thomas Craig, storekeeper, and formerly port steward for Northland Transportation Company, succeeds D. K. Jones as assistant port steward.

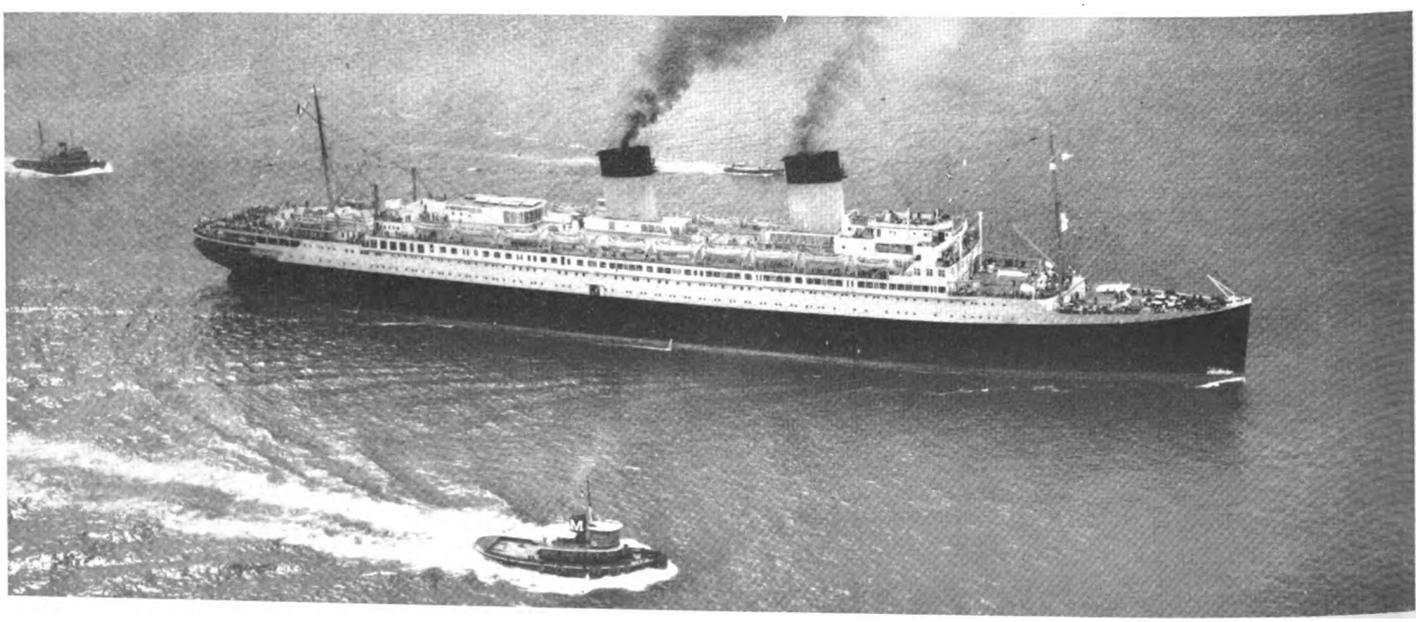
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Sudden & Christenson Operate Stevedoring at Long Beach

Colin Craig has been placed in charge of stevedore operations for Sudden and Christenson, Inc. at Los Angeles-Long Beach in connection with that company's decision to do their own stevedoring in that area under the name of Arrow Stevedoring Company.

Prior to the Southern California assignment Craig was with American-Hawaiian-Williams Dimond Company for 22 years at Seattle, latterly as terminal superintendent.

The ILE DE FRANCE, celebrated Flagship of the French Line, arrived in New York on her postwar maiden voyage from Le Havre, France to New York. Moran Towing & Transportation Company's equipment, including its new 1750 H.P. diesel-electric tugs, was on hand to dock the 45,330-ton (gross) vessel at Pier 88 North River.



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SHAFT ALLEY (continued) Chatter

Proposed $100 Trans-Atlantic Passage on Super-Cabin-Liner

U. S. construction of high-speed emergency troop transports and flattops which in the absence of being commandeered would operate as "super-cabin-liners" in the trans-Atlantic service at $100 a passage, plus meals at popular prices, was urged by Liberty Liners, Incorporated.

The proposal, in drafting-board stage, calls for two 1250-foot vessels of 34 knots ordinary speed with an emergency (maximum) of about 38 knots and each with a displacement of 105,000 tons, at an estimated cost of $100,000,000 each. They, "as twins," would be capable of repeatedly transporting 40,000 troops anywhere within the "Seven Seas." Their top deck, with funnels telescoping and ventilators collapsing could be automatically converted at sea into an unobstructed "flight deck" 800-ft. by 140-ft.

The sponsors of the super-cabin-liners explained that they required "size" to enable greater capacity and speed to accelerate utility, and also desired "length" in balance to reduce "draft" and in steaming to "span" three or "straddle" two (600-ft.) heavy-weather North Atlantic seas in the modification of "pitch." They pointed out that the question of length has heretofore been confirmed by foreign interests in suggesting ships up to 1350-ft.

Plans call for an entire ship of fireproof construction, completely enclosed and air-conditioned throughout. A total of 5,000 cabins is planned, each with twin beds and private bath, providing accommodations for 10,000 passengers. "The run of the ship to all" and without class distinction would be a feature of the proposed weekly (dock to dock) four-day trans-Atlantic crossings. Private "single" occupancy of cabins would be optional at extra cost. Otherwise, all cabin fares are to be $100 each "one-way," exclusive of meals, which would be available in three separate and distinct types of service at "popular prices."

Thousands of workers in various industries throughout the United States, in addition to local shipyard workers, would be given employment in the construction of the ships. A crew of 1500 to 1750, fluctuating according to the flow of traffic, would be needed on each vessel when operated in commercial passenger service.

Paul W. Chapman, president of Liberty Liners and his associates, pioneered the private operation of American-flag passenger vessels in trans-Atlantic service through the purchase, in 1929, of the eleven ships, including the LEVIATHAN, of the United States Lines from the Shipping Board, predecessor of the Maritime Commission. He maintains offices at 115 Broadway, New York City, and the company's Washington office is 1835 K Street, N. W., in charge of Walter Ballard, who directed the interior refinements of the ss WASHINGTON and ss MANHATTAN, the two liners conceived and contracted for under the Chapman regime of the United States Lines.

A model of the super-cabin-liners built to scale, together with miniature models of cabins, has been viewed at the K street address by officials of various interested government agencies.

Mr. Chapman summed up the super-cabin-liner by stating that the cumulative ideas of a multiple of men of marine experience are responsible for the modeling of a ship of proportions "that will profitably and yet economically serve the public and otherwise defensively serve the nation."

If the government approves of and constructs a "pair" of super-cabin-liners, according to the proposed specifications, Mr. Chapman concluded that he and his associates would undertake their commercial operation without subsidy. He said the estimated annual earnings of two such ships indicate that, with weekly sailings averaging 50 per cent of their capacity, the gross operating income per year, based upon one-way fares of $100 each, would profitably exceed the gross operating expenses, including mortgage interest, amortization, insurance, maintenance, and administration, and without crediting or accepting any "operating-differentials," otherwise known as subsidies.

Incidentally, Mr. Chapman stated, that it repeatedly has been suggested by West Coast interests that a third super-cabin-liner be constructed to likewise serve the Pacific and Far East.



J. J. CONEY, Vice President and General Manager of the Hillcone Steamship Co., San Francisco, who has been elected president of the Pacific American Tankship Association, succeeding J. H. McEarhern, formerly marine manager of the Standard Oil Co. Mr. Coney also is president of Deconhil Shipping Co. and was an industry member of the War Labor Board during the war.

Changes of Personnel in American Bureau of Shipping

American Bureau of Shipping announces the following appointments and changes in personnel:

John R. Black has been appointed principal surveyor for the Los Angeles-Long Beach Harbor, and James Shearer, Jr., has been appointed in the same capacity for Galveston, Texas.

William B. Murray has been transferred from the Honolulu, Hawaii, office to the Portland, Oregon office, and Thomas E. Hansford has been transferred from that office to San Francisco, and C. Robert Anderson has been appointed a surveyor to the Francisco district.

LARGEST, FASTEST LINER PROPOSED—Liberty Liners Incorporated, offers model for U. S. construction of emergency troop transports and flat tops which in peacetime would be operated commercially as "super-cabin-liners" in trans-Atlantic service at $100 a passage, plus meals at popular prices. Length, 1250-ft., beam, 144-ft., draft, 36-ft., 6 inches. Speed 34 knots (ordinary)—38 knots (emergency). Construction cost estimated at $100,000,000 each.



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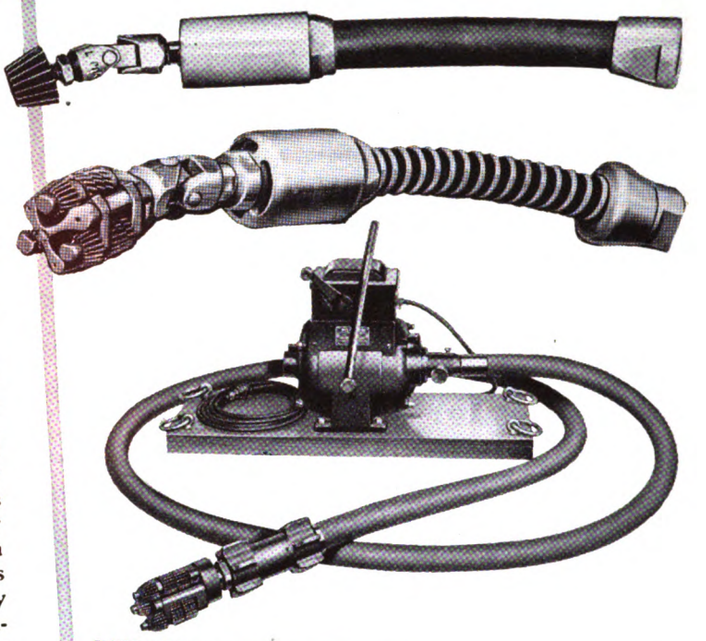
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SEPTEMBER, 1949 Vol. 44, No. 10

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Editorial Features

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INTERNATIONAL: I. C. S. FALL MEETING

The steering Committee of the International Chamber of Shipping will hold a meeting in London sometime in November 1949. Previous meetings were held in February 1947 and April 1948. Purpose of the meeting will be to review the outstanding world shipping problems facing the members of the world-wide organization.

The agenda for the 1949 ICS meeting will be as follows:

SHIPPING AND EUROPEAN RECOVERY. To consider developments in regard to the operation of the Economic Co-operation Act in its effect upon shipping.

FLAG DISCRIMINATION. To review the present position as regards Flag Discrimination in relation to actual or projected legislation, Trade Treaties, etc., and to consider what further action can be taken to remove such discrimination or to prevent its extension.

I. M. C. O. To review progress of ratification of the U. N. Maritime Convention and give further consideration to relations of I. C. S. with I. M. C. O. when established and, until then, with other bodies of U. N.

DOUBLE TAXATION. To report position and consider any further steps required to secure removal of double taxation of shipping.

MARITIME LAW. To consider results of Amsterdam Conference of Comite Maritime International and define the Industry's policy in relation to further development of the work of that body.

CO-OPERATION WITH INTERNATIONAL CHAMBER OF COMMERCE. To consider results of Quebec Congress of I. C. C. in relation to shipping and define policy for future co-operation with I. C. C. through its Committee on Sea Transport.

EGYPT. Restrictions and interferences arising from so-called "Contraband Control" (assuming not removed by then).

WIRELESS. To report results of Radio Conferences at Geneva and its effect on requirements of shipping.

INTERNATIONAL SANITARY CONFERENCE. To report results of Rome Conference and revision of International Sanitary Convention.

MIGRATION. To report results of International Conference on Migration in relation to Passenger Liner interests.

SUB-DIVISION OF CARGO SHIPS. To consider developments subsequent to International Safety Conference.

ANY OTHER MATTERS.

⚓ ⚓ ⚓

Canadian Navy Vessels to be Built in Vancouver, B.C. Yards

An $8,000,000 contract to build one of the first three Royal Canadian Navy escort vessels has been awarded to Burrard Drydock, Ltd., North Vancouver, B. C., by the Canadian government.

Similar orders have been placed with Halifax and Montreal shipyards.

The vessels are of special design developed by Canadian and British naval architects, and they will embody ideas first incorporated in United States naval vessels. The primary purpose of the craft is detection and destruction of submarines. It is understood that they will be the first vessels to be built anywhere to meet the threat posed by new submarine construction and operation.

The designer is Captain A. H. Baker, who recently was transferred from the British to the Canadian navy. He states that a new flush-deck design, with low bridge and considerable use of aluminum instead of steel for the superstructure, are in advance of current British naval design although in line with progressive British naval thinking, and they will be featured in the new Canadian vessels.

The speed will be considerably in excess of 20 knots an hour. Engine requirements have not yet been announced.

The only equipment not designed for submarine-hunting consists of two turrets equipped with rapid-fire anti-aircraft rifles.

LST Used for Oil Delivery To Alaska Beach Head

The Navy will use for the first time an LST (landing ship, tank) as an amphibious oil carrier to help battle the race against time and ice on its annual Alaskan resupply expedition this summer.

Large-capacity ballast tanks of the LST will be utilized to speed the delivery of diesel fuel ashore at Point Barrow, Alaska, during the brief ice-free period when unloading operations are possible.

Fuel oil has been ferried ashore by the Navy in drums aboard pontoon lighters in previous Alaskan resupply runs. Over 50,000 drums were put ashore last year in an operation consuming a week of the two-to-four week ice-free period.

The Navy tanker USS NECHES will carry the diesel oil in bulk this summer. It will be pumped directly into the ballast tanks of the LST, which will then be run ashore and emptied by a special pump via pipeline into five 10,000-bbl. steel tanks located several hundred yards inland.

The entire supply of oil is expected to be unloaded in two days. The 8,000-barrel capacity of the LST's ballast tanks will require about six trips between the tanker and the beach. Installation of a special pump to force the oil from the ballast tanks was the only modification to convert the LST into an oil carrier.

Besides saving time, the use of the LST as an oil carrier will result in a savings of about $250,000. The 50,000 drums unloaded last year cost about $5 each.

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AFRICAN ENTERPRISE

"SS AFRICAN ENTERPRISE"

The AFRICAN ENTERPRISE, newest addition to the American flag passenger fleet, when she sailed on her maiden voyage Saturday, July 30, to the Union of South Africa, filled a serious passenger travel need that has existed since 1942.

Since that time, when the one and only passenger ship ever to operate regularly between New York and Capetown, the CITY OF NEW YORK,was sunk by enemy action, cargo ships have provided the only sea transport on this route. Their limited capacity could not possibly provide for the tremendous number of persons desirous of traveling between the two continents.

With her sister-ship, the AFRICAN ENDEAVOR, scheduled to make her maiden voyage August 31, the ENTERPRISE will now provide a monthly first-class service from New York to Capetown, Port Elizabeth and Durban. The liners carry 82 passengers each.

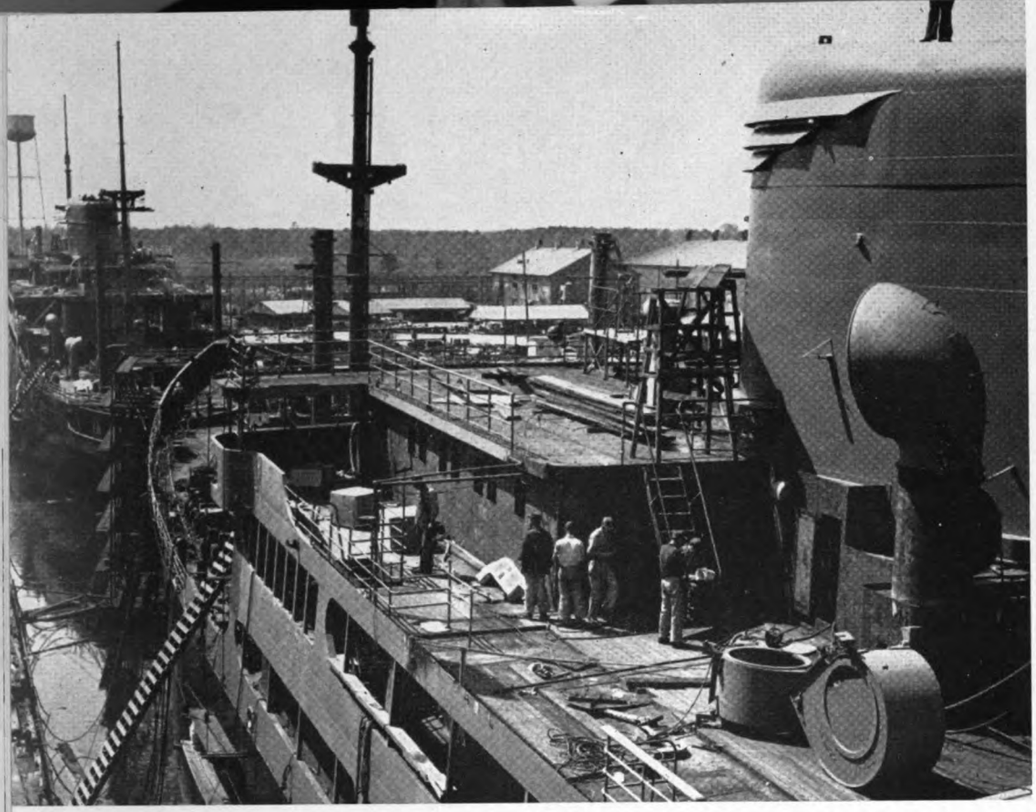
Farrell Lines, Incorporated, which owns and will operate the AFRICAN ENTER-

The AFRICAN ENTERPRISE new addition to the Farrell Line's fleet, to be followed this month by the AFRICAN ENDEAVOR were converted at the Chickasaw yard of the Gulf Shipbuilding Corporation in Mobile. Plans and specifications were drawn up by Gibbs & Cox, Inc.

Photos on this page by Bill Shrout for Gulf Shipbuilding



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Work underway at Gulf Shipbuilding on the two new Farrell Line ships. The AFRICAN ENTERPRISE was originally built by Bethlehem Shipbuilding at its Sparrows Point yard as the SS DEL ARGENTINO and was operated during the war as the USAT J. W. McANDREW by the Army.

PRISE and the AFRICAN ENDEAVOR, was founded in 1925 as the American South African Line, Inc. and was the first American Flag steamship company to operate regular scheduled sailings to South Africa. It was also the first American Flag line to sail regularly to East Africa, which service was begun in 1935. With the start of its West African service in 1946 it became the only American Flag line serving South, East and West Africa.

On April 1st, 1949, the name "Farrell Lines" replaced "American South African Line," which, with the newer services, had become inaccurate. This present name commemorates the late James A. Farrell, who as president of the United States Steel Corporation for many years, maintained a keen interest in furthering American shipping and in particular this company. His sons, John J. Farrell and James A. Farrell, Jr., are chairman of the board and president, respectively, of Farrell Lines.

The American South African Line's M. S. CITY OF NEW YORK, first and only passenger ship ever to serve regularly the U.S.A./South Africa route, made its maiden voyage to South Africa in 1930. In its many trips between the two continents it became well known and popular among people on both sides of the Atlantic. It carried 60 passengers and made the trip in 22 days.

Besides the AFRICAN ENTERPRISE and the AFRICAN ENDEAVOR, Farrell Lines has a fleet of 14 of some of the most modern and well-equipped cargo ships under the American Flag. It currently has a sailing every ten days to South Africa, every two weeks to West Africa and every month to East Africa. In addition, it operates a coastwise feeder service based on Monrovia, Liberia from Freetown to Cape Palmas, West Africa.



Veranda cafe (above) is cool and comfortable as is the dining room below. Outstanding interior design is by Dorothy Marckwald in cooperation with Alta V. Grant of Gibbs & Cox.



Main lounge (above) is extremely spacious. There is more deck space per passenger on these ships than any other passenger ship. Stateroom (below) is typical. The ships have a capacity for 82 passengers each and have a cargo capacity of 6,500 tons with 7,000 cu. ft. of refrigerated space.





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USMC REPORT ON U. S. FOREIGN

TANKER TRAFFIC

Survey shows complete reversal of export and import trends in the U. S. tankship trades

This report which summarizes United States *foreign* trade tankship carryings for 1947 is the counterpart of a report issued by the Commission in December, 1948, dealing with tankship traffic in United States domestic trade. (See The Log 1949 Yearbook.) The two reports cover in summary form all tankship traffic in United States and foreign and domestic trade for 1947 with the exception of cargo carried in (a) tankships operated between United States and Canadian ports on the great Lakes[1], and (b) tankships operated directly by the U. S. military establishment.

Prior to World War II the Maritime Commission prepared annual summaries of tankship traffic in U. S. foreign trade, the last such summary being for calendar year 1940. This report, which is the first issued since 1940, contains a finer segregation of the traffic for 1947 with respect to commodities, ports, and foreign flag vessel carryings than did the prewar reports. In addition to the several statements that accompany this report, there is available for public inspection a great deal of statistical information from which these statements were compiled.

The analysis of 1947 tankship traffic was made possible through the close cooperation of the Armed Services Petroleum Board and the Maritime Commission, utilizing data from reports submitted by tankship operators to the Commission covering individual outbound and inbound voyages for the full calendar year.

Comparison of 1940 and 1938 Tankship Traffic

Complete reversal of tankship carryings with respect to the amount of United States export and import traffic is strikingly shown in comparing 1947 operations and the last prewar year, 1938.

U. S. Foreign Trade	All Tankships (Millions of Tons of 2240 Pounds) 1947	1938	U. S. Flag Tankships 1947	1938
Exports	13.12	21.54	5.65	2.99
Imports	25.12	8.99	18.05	4.82
Total	38.24	30.53	23.70	7.81

In 1938, exports exceeded imports by about 12.5 million tons; in 1947 imports exceeded exports by 12.0 tons. Exports in 1947 were 16.1 million tons more than in 1938.

It is evident, also, that the total tankship traffic in 1947 was about 25 percent greater than for the year 1938 (which, in turn, was greater than any other prewar year except 1929, when 31.44 million tons of tankship cargo moved in U. S. foreign trade).

Tankers flying the American flag operate much more extensively in U. S. foreign trade postwar than in prewar years and carry a far greater tonnage of both import and export cargo, as well as a greater portion of the total tankship traffic. In 1947, U. S. flag tankships carried three times as much cargo as in 1938 (23.7 mill. tons vs. 7.8 mill. tons), and accounted for 62 percent of all tankship cargo transported in U. S. foreign trade compared with 26 percent in 1938. American flag tanker operations postwar thus returned to the preeminent position they held a quarter century ago.

[1] *Tankship traffic between U. S. Great Lakes ports and Canadian ports on the Great Lakes during 1947 amounted to 1.6 million long tons, 99 percent of which was export cargo consisting of 1.46 million tons of crude oil and about 135 thousand tons of refined petroleum products, according to data compiled by the Corps of Engineers, U. S. Army.*

Statement No. 1

Tankship Traffic in U. S. Foreign Trade

Tonnage of Imports and Exports by U. S. Coastal Districts and Foreign Trade Areas

Calendar Years 1947 and 1938

Part I. Carrying by Vessels of All Flags
(Millions of Long Tons)

Foreign Trade Area	Total 1947	Total 1938	Atlantic Coast 1947	Atlantic Coast 1938	Gulf Coast 1947	Gulf Coast 1938	Pacific Coast 1947	Pacific Coast 1938
IMPORTS—Total	25.12	8.99	24.41	8.02	.65	.91	.06	.06
Canada	.04	.01	.02	.01	.01	....	.01	*
Central America (West Coast)	....	*	....	....	....	....	....	*
Caribbean	24.68	8.60	24.09	7.80	.57	.80	.02	*
South America (East Coast)	.01	*	.01	....	*	....	....	....
Baltic-Scandinavian	.02	.05	.02	.05	....	....	....	....
U. K. & Eire	.14	.11	.06	.02	.05	.08	.03	.01
Bayonne-Hamburg Range	.04	.08	.02	.03	.02	.03	....	.02
Portugal-Atlantic Spain	....	*	....	....	....	*	....	....
Western Mediterranean	....	.03	....	.03	....	....	....	....
India, Persian Gulf & Red Sea	.17	....	.17	....	....	....	....	....
Far East	....	.09	....	.06	....	....	....	.03
Australasia	.02	.02	.02	.02	....	....	....	*
West, South & East Africa	....	*	....	*	....	....	....	....
EXPORTS—Total	13.12	21.54	1.43	.60	7.43	13.03	4.26	7.91
Canada	2.61	2.55	.24	.04	.63	1.60	1.74	.91
Central America (West Coast)	.44	.19	....	*	....	*	.44	.19
Caribbean	.64	2.24	.05	.07	.56	1.56	.03	.61
South America (West Coast)	.05	.41	....	....	....	*	.05	.41
South America (East Coast)	.31	.46	.01	.01	.30	.45	....	....
Baltic-Scandinavian	1.04	1.09	.08	.02	.94	1.07	.02	....
U. K. & Eire	3.42	2.22	.67	.23	2.72	1.62	.03	.37
Bayonne-Hamburg Range	1.96	4.71	.35	.20	1.60	4.33	.01	.18
Portugal-Atlantic Spain	.06	.39	....	....	.06	.39	....	....
Western Mediterranean	.56	1.83	.03	.02	.53	1.77	....	.04
India, Persian Gulf & Red Sea	.01	....	....	....	.01	....	....	....
Far East	1.37	4.91	....	....	.04	.08	1.33	4.83
Australasia	.62	.38	....	....	.01	.01	.61	.37
West, South & East Africa	.03	.16	....	.01	.03	.15	....	....

Part II. Carrying by U. S. Flag Vessels

IMPORTS—Total	18.05	4.82	17.65	4.32	.37	.50	.03	*
Canada	.03	.01	.02	.01	.01	....	....	*
Caribbean	17.78	4.77	17.42	4.27	.33	.50	.03	*
Baltic-Scandinavian	....	....	....	....	....	....	....	....
U. K. & Eire	.04	....	.03	....	.01	....	....	....
Bayonne-Hamburg Range	.05	....	.03	....	.02	....	....	....
Portugal-Atlantic Spain	....	*	....	....	....	*	....	....
Western Mediterranean	....	.01	....	.01	....	....	....	....
India, Persian Gulf & Red Sea	.14	....	.14	....	....	....	....	....
Far East	....	.01	....	.01	....	....	....	*
Australasia	.01	.02	.01	.02	....	....	....	....
EXPORTS—Total	5.65	2.99	.62	.08	2.53	1.47	2.50	1.44
Canada	1.83	.77	.21	.03	.55	.15	1.07	.59
Central America (West Coast)	.19	.15	....	....	....	*	.19	.15
Caribbean	.19	1.06	.02	.05	.17	.78	....	.23
South America (West Coast)	....	.04	....	....	....	*	....	.04
South America (East Coast)	.16	.07	....	....	.16	.07	....	....
Baltic-Scandinavian	.04	.02	.01	....	.02	.02	.01	....
U. K. & Eire	.95	.12	.20	....	.75	.10	....	.02
Bayonne-Hamburg Range	.80	.32	.17	....	.63	.21	....	.11
Portugal & Atlantic Spain	....	.02	....	....	....	.02	....	....
Western Mediterranean	.21	.11	.01	....	.20	.11	....	....
Far East	1.00	.30	....	....	.02	....	.98	.30
Australasia	.25	.01	....	....	....	.01	.25	....
West, South & East Africa	.03	....	....	....	.03	....	....	....

NOTE: There were no tankship carryings on U. S. flag vessels from ports in Central America (West Coast), South America (East Coast) and West, South and East Africa to the U. S., or to India, Persian Gulf and Red Sea ports from the United States in 1947 and 1938.

NOTE: Detailed figures for 1947 in some instances do not add to totals shown as totals represent the sum of unrounded figures.

* Less than 50,000 tons.

Source: For 1947—Vessel Utilization and Performance Reports No. 7803 and 7804 submitted by operators to the United States Maritime Commission.
For 1938—United States Maritime Commission Annual Report No. 2610.

UNITED STATES MARITIME COMMISSION
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SHIPPING STATISTICS AND ANALYSIS BRANCH

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Statement No. 2

Tankship Carryings of Commercial and Military Traffic Between U. S. Coastal Districts and Foreign Trade Areas in U. S. and Foreign Flag Vessels

Calendar Year 1947

Part I. Carrying by Vessels of All Flags

Foreign Trade Area	Total All Districts		Atlantic Coast		Gulf Coast		Pacific Coast	
	Million Tons	Million Barrels	Million Tons	Million Barrels	Million Tons	Million Barrels	Million Tons	Million Barrels
Imports—Total Commercial & Military	25.12	178.30	24.41	173.70	.65	4.20	.06	.40
Commercial—Total	24.71	175.45	24.04	171.14	.63	4.03	.04	.28
From								
Canada	.04	.29	.02	.13	.01	.11	.01	.05
Caribbean	24.37	172.99	23.80	169.40	.57	3.55	....	.04
South America (East Coast)	.01	.06	.01	.06	....	....	....	....
Baltic-Scandinavian	.02	.12	.02	.12	....	....	....	....
United Kingdom & Eire	.11	.74	.04	.32	.04	.24	.03	.18
Bayonne-Hamburg Range	.03	.31	.02	.19	.01	.12	....	....
India, Persian Gulf & Red Sea	.11	.83	.11	.83	....	....	....	....
Australasia	.02	.11	.02	.11	....	....	....	....
Military—Total	.41	2.85	.37	2.56	.02	.17	.02	.12
From								
Caribbean	.31	2.17	.29	2.05	....	....	.02	.12
United Kingdom & Eire	.03	.23	.02	.11	.01	.12	....	....
Bayonne-Hamburg Range	.01	.05	....	....	.01	.05	....	....
India, Persian Gulf & Red Sea	.06	.40	.06	.40	....	....	....	....

Part II. Carrying by U. S. Flag and Foreign Flag Vessels
(Millions of Long Tons)

Foreign Trade Area	Total All Districts		Atlantic Coast		Gulf Coast		Pacific Coast	
	U. S. Flag	For. Flag	U. S. Flag	For. Flag	U. S. Flag	For. Flag	U. S. Flag	For. Flag
Imports—Total Commercial & Military	18.05	7.07	17.65	6.76	.37	.28	.03	.03
Commercial—Total	17.64	7.07	17.28	6.76	.35	.28	.01	.03
From								
Canada	.03	....	.02	....	.01	....	....	....
Caribbean	17.47	6.90	17.13	6.66	.33	.24	.01	....
South America (East Coast)	....	.01	....	.01	....	....	....	....
Baltic-Scandinavian	....	.02	....	.02	....	....	....	....
United Kingdom & Eire	.01	.11	.01	.04	....	.04	....	.03
Bayonne-Hamburg Range	.04	....	.03	....	.01	....	....	....
India, Persian Gulf & Red Sea	.08	.03	.08	.03	....	....	....	....
Australasia	.01	....	.01	....	....	....	....	....
Military—Total	.41	....	.37	....	.02	....	.02	....
From								
Caribbean	.31	....	.29	....	....	....	.02	....
United Kingdom & Eire	.03	....	.02	....	.01	....	....	....
Bayonne-Hamburg Range	.01	....	....	....	.01	....	....	....
India, Persian Gulf & Red Sea	.06	....	.06	....	....	....	....	....

Tankship Carryings January thru December 1947 "EXPORTS"

Commercial & Military Carryings to Foreign Trade Areas from U. S. Coastal Districts by Total Commodity

Exports—Total Commercial & Military	13.12	102.10	1.43	10.64	7.43	59.76	4.26	31.70
Commercial—Total	12.02	93.00	1.35	9.91	7.10	57.01	3.57	26.08
To								
Canada	2.60	19.00	.24	1.93	.62	5.05	1.74	12.02
Central America (West Coast)	.44	3.12	....	....	....	....	.44	3.12
Caribbean	.62	4.05	.05	.37	.54	4.32	.03	.16
South America (West Coast)	.05	.35	....	....	....	....	.05	.35
South America (East Coast)	.31	2.37	.01	.05	.30	2.32	....	....
Baltic-Scandinavian	1.03	7.87	.07	.48	.94	7.24	.02	.15
United Kingdom & Eire	3.42	27.46	.67	4.79	2.72	22.43	.03	.24
Bayonne-Hamburg Range	1.64	12.92	.28	2.06	1.35	10.78	.01	.08
Portugal & Atlantic Spain	.06	.42	....	....	.06	.42	....	....
Western Mediterranean	.53	4.07	.03	.22	.50	3.85	....	....
India, Persian Gulf & Red Sea	.01	.13	....	....	.01	.13	....	....
Far East	.66	5.17	....	....	.02	.18	.64	4.98
Australasia	.62	5.04	....	....	.01	.05	.61	4.99
West & South Africa	.03	.22	....	....	.03	.22	....	....
Military—Total	1.10	9.10	.08	.73	.33	2.75	.69	5.62
To								
Canada	.01	.12	....	....	.01	.12	....	....
Caribbean	.02	.13	....	....	.02	.13	....	....
Baltic-Scandinavian	.01	.12	.01	.12	....	....	....	....
Bayonne-Hamburg Range	.32	2.74	.07	.61	.25	2.13	....	....
Western Mediterranean	.03	.25	....	....	.03	.25	....	....
Far East	.71	5.74	....	....	.02	.12	.69	5.62

Tankship Carryings January thru December 1947 "EXPORTS"

Comparison Export Carryings—U. S. vs. Foreign Flag Vessels by U. S. Coastal District & Foreign Trade Areas
(Millions of Long Tons)

Exports—Total Commercial & Military	5.65	7.47	.62	.81	2.53	4.90	2.50	1.76
Commercial—Total	4.57	7.45	.54	.81	2.22	4.88	1.81	1.76
To								
Canada	1.82	.78	.21	.03	.54	.08	1.07	.67
Central America (West Coast)	.19	.25	....	....	....	....	.19	.25
Caribbean	.17	.45	.02	.03	.15	.39	....	.03
South America (West Coast)	....	.05	....	....	....	....	....	.05
South America (East Coast)	.16	.15	....	.01	.16	.14	....	....
Baltic-Scandinavian	.03	1.00	....	.07	.02	.92	.01	.01
United Kingdom & Eire	.95	2.47	.20	.47	.75	1.97	....	.03
Bayonne-Hamburg Range	.50	1.14	.10	.18	.40	.95	....	.01
Portugal & Atlantic Spain	....	.06	....	....	....	.06	....	....
Western Mediterranean	.18	.35	.01	.02	.17	.33	....	....
India, Persian Gulf & Red Sea	....	.01	....	....	....	.01	....	....
Far East	.29	.37	....	....	....	.02	.29	.35
Australasia	.25	.37	....	....	....	.01	.25	.36
West & South Africa	.03	....	....	....	.03	....	....	....
Military—Total	1.08	.02	.08	....	.31	.02	.69	....
To								
Canada	.01	....	....	....	.01	....	....	....
Caribbean	.02	....	....	....	.02	....	....	....
Baltic-Scandinavian	.01	....	.01	....	....	....	....	....
Bayonne-Hamburg Range	.30	.02	.07	....	.23	.02	....	....
Western Mediterranean	.03	....	....	....	.03	....	....	....
Far East	.71	....	....	....	.02	....	.69	....

UNITED STATES MARITIME COMMISSION
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Total Tankship Cargo (Imports and Exports Combined) and U. S. Flag Participation

Year	Tons*	% U.S.Flag	Year	Tons*	% U.S.Flag
1921	23.34	75	1931	24.62	45
1922	25.60	75	1932	21.42	42
1923	24.82	60	1933	18.22	36
1924	25.71	60	1934	20.22	36
1925	23.15	57	1935	21.09	38
1926	24.89	54	1936	23.06	32
1927	24.96	53	1937	28.93	22
1928	29.30	52	1938	30.53	26
1929	31.44	51	1939	30.53	18
1930	30.28	50	1946	24.92	29

* *Millions of tons of 2,240 pounds. Excludes U. S.-Canada tankship traffic on the Great Lakes.*

The foreign areas involved in the movement of tankship traffic changed but little between 1938 and 1947. In both years more than 95 percent of all tankship imports (24.68 million tons in 1947, 8.60 million tons in 1938) came from the Caribbean area and practically all such cargo was discharged at U. S. Atlantic ports. Exports to foreign areas were more widely distributed, but about 90 percent of the tonnage of all U. S. exports transported in tankers in both 1938 and 1947 went to five foreign areas, as follows:

Foreign Trade Area	1947	1938
	(Millions of tons of 2240 lbs.)	
Canada	2.62	2.55
Caribbean	0.63	2.24
Northern Europe	6.43	8.02
Baltic-Scandinavia	(1.36	1.09)
United Kingdom & Eire	(3.42	2.22)
Bayonne-Hamburg Range	(1.65	4.71)
Western Mediterranean	0.57	1.83
Far East	1.35	4.91
Total	11.60	19.55
Other foreign areas	1.52	1.99
Grand Total	13.12	21.54

In the export trade, tanker cargoes move predominantly from U. S. Gulf ports (about 57 percent of total in 1947 and 60 percent in 1938) and secondarily from U. S. Pacific Coast ports (about 32 percent in 1947 and 37 percent in 1938). Shipments from Atlantic ports amounted to approximately 11 percent of the total in 1947 compared with 3 percent in 1938.

American flag tanker operations predominate in United States import trade, amounting to 72 percent of total tankship imports in 1947 (compared with 54 percent of all such imports in 1938). In the export trade, American flag tankers carry much less cargo, quantitatively, than inbound (5.65 mill. tons exports vs. 18.05 mill. tons imports in 1947) but the proportion of tankship exports under the American flag has increased markedly since prewar years, amounting to 43 percent in 1947 compared with 14 percent in 1938.

It is noteworthy, also, that the total tons of export cargo carried in American flag tankers in 1947 (5.65 million tons) was nearly twice the amount so carried in 1938 (2.99 million tons). This increase in American flag tanker exports occurred despite the very substantial overall decline in total tanker exports—13.12 million tons in 1947 compared with 21.54 million tons in 1938. *Statement No. 1* summarizes in total and with respect to U. S. flag vessels 1947 and 1938 tankship traffic, both imports and exports, by U. S. coastal districts and foreign trade areas.

Commercial and Military Tankship Traffic in 1947

A minor portion of 1947 tankship carryings in United States foreign trade con-

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sisted of cargo for account of the U. S. military which was transported by commercial operators, practically all of the tonnage being moved in U. S. flag vessels. In the import trade, the military traffic amounted to less than 2 percent of total tankship imports, while in the export trade such traffic was about 8 percent of the total. The amount of commercial and military traffic carried between U. S. coastal districts and foreign trade areas in 1947 by American and foreign flag tankers is shown in *Statement No. 2.*

1947 Tankship Carryings by Foreign Flag Vessels

Foreign flag tankship participation in United States foreign trade in 1947 was confined in the main to British, Canadian, Norwegian, and Panamanian vessels which carried 85 percent of the total cargo tons transported by all foreign flag tankers and made 90 per cent of the entrances and 73 percent of the clearances of all such vessels. Tankers flying the flags of several other nations also engaged in United States foreign trade in 1947, the extent of participation of each foreign flag in both import and export traffic being shown in *Statement No. 3.*

U. S. Ports Share of 1947 Tankship Cargoes

Many ports along the Atlantic, Gulf, and Pacific coasts of the United States shared in 1947 tankship traffic in U. S. foreign trade. Atlantic coast ports handled 69 percent of all import and export tonnage, while Gulf ports had 21 percent and Pacific ports 10 percent of all tankship cargoes. Fifteen Atlantic coast ports accounted for practically all of the tankship imports and exports along that coast. In the Gulf, ten ports handled 99 percent of the traffic, and on the Pacific Coast three California ports had 97 percent of the total. The quantity of 1947 tankship imports and exports handled at each of these 28 ports, together with the amount imported from the Caribbean and exported to each important foreign trade area, is shown in *Statement No. 4,* which expresses the quantities both in millions of tons and millions of barrels.

Statement No. 3

Foreign Flag Participation in U. S. Foreign Trade Tankship Traffic Import and Expart Cargo Carried and Number of Entrances and Clearances of U. S. and Foreign Flag Vessels

Calendar Year 1947

IMPORTS					EXPORTS			
CARGO CARRIED		Percent of Total Tons	Number of Entrances	Flags	Number of Clearances	Percent of Total Tons	CARGO CARRIED	
Millions U. S. Barrels	Millions Long Tons						Millions Long Tons	Millions U. S. Barrels
178.30	25.12	100.00	1,803	Total—Commercial & Military Carryings....	1,131	100.00	13.12	102.10
128.67	18.05	71.71	1,221	United States Flag.....	424	43.06	5.65	44.42
49.63	7.07	28.29	582	Foreign Flags.....	707	56.94	7.47	57.68
175.45	24.71	100.00	1,774	Total—Commercial Carryings—All Flags....	1,054	100.00	12.02	93.00
125.82	17.64	71.39	1,192	Total—United States Flag.....	349	38.12	4.57	35.46
49.63	7.07	28.61	582	Total—Foreign Flags.....	705	61.88	7.45	57.54
2.99	0.48	1.94	50	British.....	220	21.01	2.53	20.22
0.06	0.01	0.04	1	Dutch.....	19	1.50	0.18	1.42
.....	.....	.....	.....	French.....	23	2.08	0.25	1.84
.....	.....	.....	.....	Honduran.....	21	1.66	0.20	1.34
1.54	0.20	0.81	42	Mexican.....	29	1.83	0.22	1.71
19.69	2.73	11.05	209	Norwegian.....	149	13.70	1.65	12.62
.....	.....	.....	.....	Spanish.....	13	1.16	0.14	0.49
0.52	0.07	0.28	6	Swedish.....	33	3.24	0.39	3.63
18.19	2.63	10.65	203	Panamanian.....	97	8.31	1.00	7.63
5.99	0.85	3.44	59	Canadian.....	47	3.90	0.47	3.47
.....	.....	.....	.....	U. S. S. R.....	10	1.00	0.12	0.86
0.65	0.10	0.40	12	Other Foreign Flags.....	44	2.49	0.30	2.31
				Military Carryings.....				
2.85	0.41	100.00	29	United States Flag.....	75	98.16	1.08	9.86
.....	.....	.....	.....	Foreign Flag.....	2	1.84	0.02	0.14

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Statement No. 4

Tankship Commercial Traffic Handled at U. S. Atlantic, Gulf and Pacific Ports, Tonnage of Imports and Exports at Individual U. S. Ports By Major Foreign Trade Areas

Calendar Year 1947

U. S. Ports	Total Exports & Imports		Total Exports		Total Imports		Imports from Caribbean	
	Million Tons	Million Barrels	Million Tons	Million Barrels	Million Tons	Million Barrels	Million Tons	Million Barrels
Grand Total All Ports	36.73	268.45	12.02	93.00	24.71	175.45	24.38	172.99
Total Atlantic Ports	25.39	181.05	1.35	9.91	24.04	171.14	23.80	169.40
Baltimore, Md.	2.06	14.49	.08	.64	1.98	13.85	1.98	13.85
Boston, Mass.	1.62	11.22	.09	.66	1.53	10.56	1.53	10.56
Chester, Pa.	1.18	8.75	.23	1.83	.95	6.92	.94	6.81
Fall River, Mass.	.10	.65	....	....	.10	.65	.10	.65
Philadelphia, Pa.	5.98	43.27	.35	2.64	5.63	40.63	5.54	39.99
New Haven, Conn.	.49	3.34	....	....	.49	3.34	.49	3.34
New York, N. Y.	8.58	61.52	.38	2.91	8.20	58.61	8.13	58.08
Norfolk, Va.	1.25	9.16	....	....	1.25	9.16	1.22	8.95
Portland, Me.	2.28	16.70	....	....	2.28	16.70	2.28	16.70
Providence, R. I.	.57	3.95	....	....	.57	3.95	.57	3.95
Wilmington, Del.	.08	.40	....	....	.08	.40	.08	.40
Charleston, S. C.	.26	1.78	....	....	.26	1.78	.26	1.78
Jacksonville, Fla.	.09	.64	....	....	.09	.64	.08	.55
Port Everglades, Fla.	.31	1.57	.13	.62	.18	.95	.18	.95
Savannah, Ga.	.29	1.92	....	....	.29	1.92	.29	1.92
Other Atlantic Ports	.25	1.69	.09	.61	.16	1.08	.13	.92
Total Gulf Coast Ports	7.74	61.04	7.11	57.01	.63	4.03	.57	3.55
Baton Rouge, La.	.39	3.05	.37	2.92	.02	.13	....	....
Beaumont, Tex.	.21	1.75	.21	1.75	....	....	....	....
Brownsville, Tex.	.28	2.29	.20	1.56	.08	.73	.08	.73
Corpus Christi, Tex.	1.39	11.19	1.38	11.12	.01	.07	.01	.07
Galveston, Tex.	.46	3.68	.44	3.50	.02	.18	....	....
Houston, Tex.	1.81	14.93	1.72	14.30	.09	.63	.09	.63
Lake Charles, La.	.35	2.84	.35	2.84	....	....	....	....
New Orleans, La.	.56	3.54	.27	2.03	.29	1.51	.27	1.34
Port Arthur, Tex.	2.15	16.78	2.08	16.24	.07	.54	.07	.54
Texas City, Tex.	.06	.49	.06	.49	....	....	....	....
Other Gulf Coast Ports	.08	.50	.03	.26	.05	.24	.05	.24
Total Pacific Coast Ports	3.60	26.36	3.56	26.08	.04	.28	.01	.04
Los Angeles, Calif.	1.83	13.33	1.82	13.29	.01	.04	.01	.04
San Francisco, Calif.	1.02	7.38	1.01	7.33	.01	.05	....	....
Port San Luis, Calif.	.66	4.91	.66	4.91	....	....	....	....
Other Pacific Coast Ports	.09	.74	.07	.55	.02	.19	....	....

Commercial Exports by Countries
(Millions of Long Tons)

U. S. Ports	Canada	Caribbean	Baltic-Scandinavian	United Kingdom Eire	Bayonne-Hamburg Range	Western Mediterranean	Far East	Australasia	All Other Areas
Grand Total All Ports	2.60	.62	1.02	3.42	1.65	.53	.66	.62	.90
Total Atlantic Ports	.24	.05	.07	.67	.28	.03	....	....	.01
Baltimore, Md.	.06	....	.01	.01	....	....	....	....	....
Boston, Mass.	.07	....	.01	....	.01	....	....	....	....
Chester, Pa.	.04	....	....	.15	.04	....	....	....	....
Fall River, Mass.	....	....	....	....	....	....	....	....	....
Philadelphia, Pa.	.03	....	.04	.19	.07	.01	....	....	.01
New Haven, Conn.	....	....	....	....	....	....	....	....	....
New York, N. Y.	.03	.03	.01	.18	.12	.01	....	....	....
Norfolk, Va.	....	....	....	....	....	....	....	....	....
Portland, Me.	....	....	....	....	....	....	....	....	....
Providence, R. I.	....	....	....	....	....	....	....	....	....
Wilmington, Del.	....	....	....	....	....	....	....	....	....
Charleston, S. C.	....	....	....	....	....	....	....	....	....
Jacksonville, Fla.	....	....	....	....	....	....	....	....	....
Port Everglades, Fla.	....	.01	....	.12	....	....	....	....	....
Savannah, Ga.	....	....	....	....	....	....	....	....	....
Other Atlantic Ports	.01	.01	....	.02	.04	.01	....	....	....
Total Gulf Coast Ports	.61	.55	.94	2.72	1.35	.51	.02	.01	.40
Baton Rouge, La.	.17	.13	....	.03	....	....	....	....	.04
Beaumont, Tex.	.01	....	....	.15	.01	.01	....	....	.03
Brownsville, Tex.	....	....	....	.01	.18	.01	....	....	....
Corpus Christi, Tex.	.01	.04	.09	.67	.28	.24	....	....	.05
Galveston, Tex.	....	....	.02	.29	.08	.04	....	....	.01
Houston, Tex.	.26	.22	.15	.71	.21	.07	.02	....	.08
Lake Charles, La.	.03	....	.02	.10	.14	.04	....	....	.02
New Orleans, La.	.06	....	.01	.10	.06	.03	....	.01	....
Port Arthur, Tex.	.07	.14	.65	.62	.36	.07	....	....	.17
Texas City, Tex.	....	....	....	.03	.03	....	....	....	....
Other Gulf Coast Ports	....	.02	....	.01	....	....	....	....	....
Total Pacific Coast Ports	1.74	.46	.02	.03	.01	....	.64	.61	.05
Los Angeles, Calif.	.53	.45	.01	....	....	....	.46	.32	.05
San Francisco, Calif.	.48	.01	.01	.03	.01	....	.18	.29	....
Port San Luis, Calif.	.66	....	....	....	....	....	....	....	....
Other Pac. Coast Ports	.07	....	....	....	....	....	....	....	....

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Statement No. 6

Tankship Carryings of Five Major Commodities and Miscellaneous Products
Imports and Exports by U. S. Coastal Districts and Foreign Trade Areas
Calendar Year 1947

Foreign Trade Area	Total All Districts		Atlantic Coast		Gulf Coast		Pacific Coast	
	Million Tons	Million Barrels	Million Tons	Million Barrels	Million Tons	Million Barrels	Million Tons	Million Barrels
Crude Oil								
Imports—Total Commercial & Military	16.03	115.88	15.87	114.81	.16	1.07	....	....
Commercial—Total	16.03	115.88	15.87	114.81	.16	1.07	....	....
From								
Caribbean	15.92	115.00	15.77	114.00	.15	1.00	....	....
United Kingdom & Eire	.01	.07	....	....	.01	.07	....	....
Bayonne-Hamburg Range	.02	.19	.02	.19	....	....	....	....
India, Persian Gulf & Red Sea	.08	.62	.08	.62	....	....	....	....
Military—Total	....	....	....	....	....	....	....	....
Exports—Total Commercial & Military	1.83	13.64	.02	.12	.97	7.38	.84	6.14
Commercial—Total	1.83	13.64	.02	.12	.97	7.38	.84	6.14
To								
Canada	.89	6.45	.02	.12	.03	.20	.84	6.14
Caribbean	.16	1.20	....	....	.16	1.20	....	....
South America (East Coast)	.13	.95	....	....	.13	.95	....	....
Baltic-Scandinavian	.01	.05	....	....	.01	.05	....	....
United Kingdom & Eire	.07	.46	....	....	.07	.46	....	....
Bayonne-Hamburg Range	.35	2.67	....	....	.35	2.67	....	....
Western Mediterranean	.25	1.85	....	....	.25	1.85	....	....
Military—Total	....	....	....	....	....	....	....	....
Gasoline								
Imports—Total Commercial & Military	.17	1.40	.03	.22	.14	1.18	....	....
Commercial—Total	.15	1.28	.03	.22	.12	1.06	....	....
From								
Caribbean	.13	1.15	.03	.22	.10	.93	....	....
Bayonne-Hamburg Range	.02	.12	....	....	.02	.12	....	....
Australasia	....	.01	....	....	....	.01	....	....
Military—Total	.02	.12	....	....	.02	.12	....	....
From								
United Kingdom & Eire	.02	.12	....	....	.02	.12	....	....
Exports—Total Commercial & Military	5.09	44.38	.40	3.38	3.24	28.70	1.45	12.30
Commercial—Total	4.33	37.77	.33	2.80	3.00	26.53	1.00	8.44
To								
Canada	.44	3.81	.08	.66	.21	1.97	.15	1.18
Central America (West Coast)	.12	1.02	....	....	....	....	.12	1.02
Caribbean	.26	2.20	.01	.08	.23	1.96	.02	.16
South America (East Coast)	.07	.63	....	....	.07	.63	....	....
Baltic-Scandinavian	.30	2.67	.01	.09	.29	2.58	....	....
United Kingdom & Eire	1.72	15.09	.17	1.46	1.55	13.63	....	....
Bayonne-Hamburg Range	.56	4.99	.06	.51	.50	4.48	....	....
Portugal & Atlantic Spain	.01	.10	....	....	.01	.10	....	....
Western Mediterranean	.09	.78	....	....	.09	.78	....	....
India, Persian Gulf & Red Sea	.02	.13	....	....	.02	.13	....	....
Far East (Incls. N.E.I., China, Japan, Philippines)	.30	2.58	....	....	.01	.09	.29	2.49
Australasia	.42	3.59	....	....	....	....	.42	3.59
West & South Africa	.02	.18	....	....	.02	.18	....	....
Military—Total	.76	6.61	.07	.58	.24	2.17	.45	3.86
To								
Canada	.02	.18	.01	.08	.01	.10	....	....
Baltic-Scandinavian	.27	2.36	.06	.50	.21	1.86	....	....
Western Mediterranean	.02	.21	....	....	.02	.21	....	....
Far East (Incls. N.E.I., China, Japan, Philippines)	.45	3.86	....	....	....	....	.45	3.86
Distillate Fuel Oils								
Imports—Total Commercial & Military	.66	4.77	.62	4.52	.02	.13	.02	.12
Commercial—Total	.62	4.47	.60	4.34	.02	.13	....	....
From								
Caribbean	.58	4.21	.58	4.21	....	....	....	....
Canada	.04	.26	.02	.13	.02	.13	....	....
Military—Total	.04	.30	.02	.18	....	....	.02	.12
From								
Caribbean	.04	.30	.02	.18	....	....	.02	.12
Exports—Total Commercial & Military	4.08	29.21	.56	4.13	2.42	17.78	1.10	7.30
Commercial—Total	3.90	27.85	.54	3.95	2.37	17.41	.99	6.49
To								
Canada	.74	4.80	.07	.51	.11	.84	.56	3.45
Central America (West Coast)	.06	.41	....	....	....	....	.06	.41
Caribbean	.07	.50	.03	.19	.04	.31	....	....
South America (East Coast)	.08	.53	.01	.05	.07	.48	....	....
Baltic-Scandinavian	.57	4.19	.02	.17	.53	3.87	.02	.15
United Kingdom & Eire	1.29	9.68	.30	2.20	.96	7.29	.03	.19
Bayonne-Hamburg Range	.57	4.04	.09	.69	.47	3.27	.01	.08
Portugal & Atlantic Spain	.04	.28	....	....	.04	.28	....	....
Western Mediterranean	.16	1.16	.02	.14	.14	1.02	....	....
Far East	.17	1.17	....	....	....	....	.17	1.17
Australasia	.15	1.09	....	....	.01	.05	.14	1.04
Military—Total	.18	1.36	.02	.18	.05	.37	.11	.81
To								
Canada	.01	.07	.01	.07	....	....	....	....
Caribbean	.01	.11	....	....	.01	.11	....	....
Bayonne-Hamburg Range	.04	.32	.01	.11	.03	.21	....	....
Western Mediterranean	.01	.05	....	....	.01	.05	....	....
Far East	.11	.81	....	....	....	....	.11	.81
Residual Fuel Oils								
Imports—Total Commercial & Military	7.05	49.39	7.00	49.07	.05	.32	....	....
Commercial—Total	6.70	47.01	6.65	46.69	.05	.32	....	....
From								
Caribbean	6.65	46.64	6.60	46.32	.05	.32	....	....
South America (East Coast)	.01	.06	.01	.06	....	....	....	....
India, Persian Gulf & Red Sea	.03	.21	.03	.21	....	....	....	....
Australasia	.01	.10	.01	.10	....	....	....	....
Military—Total	.35	2.38	.35	38	....	....	....	....
From								
Caribbean	.27	1.87	.27	1.87	....	....	....	....
United Kingdom & Eire	.02	.11	.02	.11	....	....	....	....
India, Persian Gulf & Red Sea	.06	.40	.06	.40	....	....	....	....
Exports—Total Commercial & Military	1.25	8.64	.20	1.54	.32	2.20	.73	4.90
Commercial—Total	1.14	7.86	.20	1.54	.32	2.20	.62	4.12
To								
Canada	.25	1.71	.06	.48	.02	.16	.17	1.07
Central America (West Coast)	.25	1.65	....	....	....	....	.25	1.65
Caribbean	.13	.88	.01	.07	.12	.81	....	....
South America (West Coast)	.05	.35	....	....	....	....	.05	.35
Baltic-Scandinavian	.11	.76	.03	.21	.08	.55	....	....
United Kingdom & Eire	.11	.80	.05	.41	.05	.34	.01	.05
Bayonne-Hamburg Range	.07	.54	.05	.37	.02	.17	....	....
Portugal & Atlantic Spain	.01	.05	....	....	.01	.05	....	....
Western Mediterranean	.02	.12	....	....	.02	.12	....	....
Far East	.12	.85	....	....	....	....	.12	.85
Australasia	.02	.15	....	....	....	....	.02	.15
Military—Total	.11	.78	....	....	....	....	.11	.78
To								
Far East	.11	.78	....	....	....	....	.11	.78
Kerosene								
Imports—Total Commercial & Military	.06	.43	.05	.38	.01	.05	....	....
Commercial—Total	.05	.38	.05	.38	....	....	....	....
From								
Caribbean	.05	.38	.05	.38	....	....	....	....
Military—Total	.01	.05	....	....	.01	.05	....	....
From								
Bayonne-Hamburg Range	.01	.05	....	....	.01	.05	....	....
Exports—Total Commercial & Military	.60	4.75	.03	.24	.44	3.52	.13	.99
Commercial—Total	.56	4.40	.03	.24	.42	3.34	.11	.82
To								
Canada	.28	2.21	.02	.16	.24	1.88	.02	.17
Caribbean	....	.03	....	....	....	.03	....	....
South America (East Coast)	.03	.26	....	....	.03	.26	....	....
Baltic-Scandinavian	.03	.21	....	....	.03	.21	....	....
United Kingdom & Eire	.08	.60	....	....	.08	.60	....	....
Bayonne-Hamburg Range	.03	.26	.01	.08	.02	.18	....	....
Western Mediterranean	.01	.08	....	....	.01	.08	....	....
Far East	.07	.57	....	....	.01	.10	.06	.47
Australasia	.03	.18	....	....	....	....	.03	.18
Military—Total	.04	.35	....	....	.02	.18	.02	.17
To								
Bayonne-Hamburg Range	.01	.07	....	....	.01	.07	....	....
Far East	.03	.28	....	....	.01	.11	.02	.17
Miscellaneous Products[1]								
Imports—Total Commercial & Military	1.17	6.42	.83	4.71	.29	1.43	.05	.28
Commercial—Total	1.17	6.42	.83	4.71	.29	1.43	.05	.28
From								
Canada	.01	.05	....	....	....	....	.01	.05
Caribbean	1.04	5.58	.77	4.27	.26	1.26	.01	.05
Baltic-Scandinavian	.02	.12	.02	.12	....	....	....	....
United Kingdom & Eire	.10	.67	.04	.32	.03	.17	.03	.18
Military—Total	....	....	....	....	....	....	....	....
Exports—Total Commercial & Military	.26	1.48	.23	1.25	.02	.15	.01	.08
Commercial—Total	.26	1.48	.23	1.25	.02	.15	.01	.08
To								
Canada	....	.02	....	....	....	....	....	.02
Caribbean	.01	.06	....	.03	....	....	.01	.03
United Kingdom & Eire	.16	.83	.15	.72	.01	.11	....	....
Bayonne-Hamburg Range	.07	.42	.07	.42	....	....	....	....
Western Mediterranean	.01	.08	.01	.08	....	....	....	....
Australasia	....	.03	....	....	....	....	....	.03
West & South Africa	.01	.04	....	....	.01	.04	....	....
Military—Total	....	....	....	....	....	....	....	....

[1] Miscellaneous Products include:

	Total Imports		Total Exports	
	Long Tons	U. S. (42's) Barrels	Long Tons	U. S. (42's) Barrels
Molasses Blackstrap	767,205	3,764,713	123,929	547,758
Asphalt & Road Oil	203,218	1,289,788	78,340	463,486
Creosote Oils	82,534	545,921	....	....
Alcohol (190°)	63,014	491,096	34,421	268,010
Fish & Whale Oils	18,034	129,845	....	....
Chemicals	1,417	9,367	4,183	37,229
Miscellaneous (N.E.S.)	30,829	190,434	24,084	168,406
Total	1,166,251	6,421,164	264,957	1,484,889

UNITED STATES MARITIME COMMISSION
BUREAU OF GOVERNMENT AIDS
DIVISION OF VESSEL UTILIZATION AND PLANNING
SHIPPING STATISTICS AND ANALYSIS BRANCH

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Statement No. 5

Tankship Carryings of Principal Commodities in U. S. Foreign Trade, Imports and Exports of Commercial and Military Cargo by U. S. Coastal Districts

Calendar Year 1947

Item	Total All Districts Million Tons	Total All Districts Percent Total	Atlantic Coast Million Tons	Atlantic Coast Percent Total	Gulf Coast Million Tons	Gulf Coast Percent Total	Pacific Coast Million Tons	Pacific Coast Percent Total
Grand Total All Carryings	38.24	100	25.85	100	8.08	100	4.31	100
Total Commercial	36.73	96	25.39	98	7.74	96	3.60	84
Imports	24.71		24.04		.63		.04	
Exports	12.02		1.35		7.11		3.56	
Total Military	1.51	4	.46	2	.34	4	.71	16
Imports	.41		.37		.02		.02	
Exports	1.10		.09		.32		.69	
Total Crude Oil	17.86	47	15.89	61	1.13	14	.84	19
Commercial								
Imports	16.03		15.87		.16		....	
Exports	1.83		.02		.97		.84	
Military								
Imports	....	....	....	....	....	....	....	....
Exports	....	....	....	....	....	....	....	....
Total Gasoline	5.26	14	.43	2	3.38	42	1.45	34
Commercial								
Imports	.15		.03		.12		....	
Exports	4.33		.33		3.00		1.00	
Military								
Imports	.02		....		.02		....	
Exports	.76		.07		.24		.45	
Total Kerosene	.66	2	.08	*	.45	6	.13	3
Commercial								
Imports	.05		.05		....		....	
Exports	.56		.03		.42		.11	
Military								
Imports	.01		....		.01		....	
Exports	.04		....		.02		.02	
Total Distillate Fuels	4.74	12	1.18	5	2.44	30	1.12	26
Commercial								
Imports	.62		.60		.02		....	
Exports	3.90		.54		2.37		.99	
Military								
Imports	.04		.02		....		.02	
Exports	.18		.02		.05		.11	
Total Residual Fuels	8.30	22	7.20	28	.37	4	.73	17
Commercial								
Imports	6.70		6.65		.05		....	
Exports	1.14		.20		.32		.62	
Military								
Imports	.35		.35		....		....	
Exports	.11		....		....		.11	
Total Miscellaneous Products	1.43	3	1.06	4	.31	4	.06	1
Imports	1.17		.83		.20		.05	
Exports	.26		.23		.02		.01	
Percent of Commodity Carryings by Coastal Districts								
Commodity								
Crude Oil		100		89		6		5
Gasoline		100		8		64		28
Kerosene		100		12		68		20
Distillate Fuels		100		25		51		24
Residual Fuels		100		87		4		9
Miscellaneous		100		74		22		4

* Less than one percent.

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SHIPPING STATISTICS AND ANALYSIS BRANCH

Movement of Principal Tankship Commodities in 1947

Ninety-seven percent of all United States export and import cargo that moved in tankships in 1947 consisted of five petroleum items—crude oil (47 percent of the total), gasoline (14 percent), kerosene (2 percent), distillate fuels (12 percent), and residual fuels (22 percent). The remainder (3 percent) consisted principally of blackstrap molasses and various miscellaneous liquid products.

Most of the *crude oil* transported in tankships consisted of import cargo (16.03 million tons), exports of crude oil amounting to only 1.83 million tons. The same was true with respect to *residual fuels*[2], imports of which totaled 7.05 million tons while exports were but 1.25 million tons. These two petroleum products accounted for more than 90 percent of all import traffic.

Gasoline shipments in tankers were substantial in 1947, amounting in total to 5.26 million tons. Practically all of the gasoline was exported (5.09 million tons), shipments being made to many foreign destinations. *Kerosene* tankship traffic was quite light, amounting to but 0.66 million tons in 1947, of which 0.60 million tons was exported. *Distillate fuels*[3] moved mainly in the export trade, 4.08 million tons being carried to foreign countries, compared with 0.66 million tons imported during 1947. With respect to the several *miscellaneous products* carried in tankships totaling 1.43 million tons, blackstrap molasses cargo amounted to 0.89 million tons, of which 0.77 million tons represented imports essentially all of which came from the Caribbean area. Asphalt and road oil traffic amounted to 0.28 million tons, alcohol carryings 0.10 million tons, and all other products 0.16 million tons.

The amount of traffic of each principal commodity, with respect to U. S. Atlantic, Gulf and Pacific coastal districts, is summarized in *Statement No. 5*, and is shown in further detail with respect to the ma-for foreign trade areas in *Statement No. 6*.

[2] *Included in the term residual fuels are such items as heavy oils for heating and industrial plants, bunkers, and low sulphur fuel oils.*

[3] *Distillate fuels include gas oil, diesel oil, and stove oils.*

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UNION OIL COMPANY OF CALIFORNIA

UNION OIL BUILDING
LOS ANGELES 14, CALIFORNIA

J. B. STENE
MANAGER MARINE OPERATIONS

August 4, 1949

Mr. Sam M. Hawkins
General Manager
The LOG
121 Second Street
San Francisco 5, California

Dear Mr. Hawkins:

I just finished reading the last issue of The LOG, the Review and Year Book number, and I wish to take this opportunity to compliment you upon this fine publication. I was particularly interested in the detail comprehensive listing of world tonnage. I was laboriously searching for some of this information when your publication arrived, giving me the very answers I was looking for. An issue like this serves to refresh one's memory that The LOG is the real magazine for shipping men.

With kind regards and best wishes for your continued success.

Very truly yours,

JBS-erc

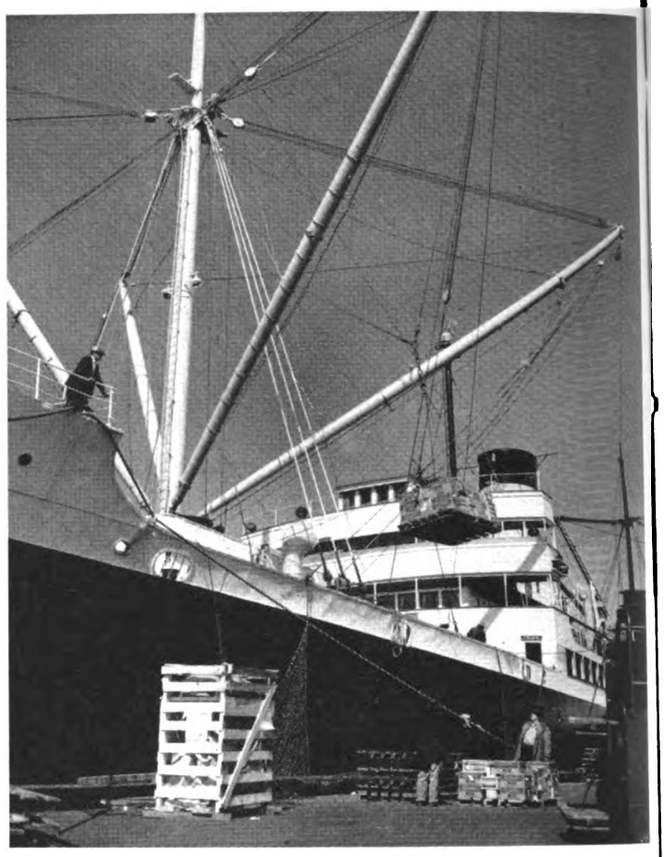
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A PICTURE OF ALASKA SHIPPING

The outlook for Alaska shipping leads to the conclusion that either there must be an upward revision of the rate structure or the government must provide aid.

By REAR ADMIRAL F. G. ZEUSLER USCG (ret.)

Executive Assistant to the President Alaska Steamship Company



"Even with this traffic increase the company sustained appreciable losses during the last half of 1948 and the first quarter of 1949. . . ."

Since 1867 more than 60 different companies have come and gone in the Alaska trade. The history has been marked by intermittent appearances of companies which have endeavored to "skim the cream" from the trade on what they considered lucrative routes. As is indicated by the records, their efforts have never been successful for any extended period. Of all the lines that have entered the trade, only the Alaska Steamship Company remains to serve the Territory generally.

The Alaska Steamship Company was founded in 1897 during the Klondike gold rush and serviced Southeastern Alaska with such ships as the DOLPHIN, WILLAPA, and DIRIGIO. When gold was discovered at Cape Nome, Alaska, in 1900, the Northwestern Steamship Company was organized, with the VICTORIA, OLYMPIA and TACOMA being put into the Nome trade. In 1908 these two companies were merged and then the present-day Alaska Steamship Company came into existence. The new company was basically an all-Alaska line and has been distinctive in that it has traditionally accepted the obligation of serving all Alaska since that time.

Prior to World War II several companies were in the Alaska trade providing adequate service without government aid. At that time ships were available for purchase at reasonably low rates. Efficiency was high and the costs of operation were well within reason.

The fleets in the trade at that time compared as follows:

Company	Vessels	Tonnage
Alaska Steamship Co.	17	69,018
Northland Transportation Company	5	14,405
Company	3	3,675
Alaska Transportation		
Santa Ana Steamship Co.	1	1,756
Canning Industry	16	83,252

After the termination of the war, the Alaska carriers were asked to resume private operations in the wake of a government operating period during the last two years of which the Maritime Commission sustained losses aggregating $6,500,000. However, conditions had changed since prewar. Of the original 42 vessels, seven remained in commission. The others were lost by requisition, war casualties or were sold because of obsolescence.

Operating Cost Increase

The cost of repairs, food, oil, insurance and labor had increased inordinately. It was found that if the private companies were to resume service, some relief would be necessary. The loss of the carriers' prewar ships was the major difficulty to overcome. The joint studies of the House Merchant Marine and Fisheries subcommittee showed that an 88% increase in revenue was necessary for the operators to maintain service. Of this about 13% represented the cost of marine insurance, 43% the charter hire on government-owned surplus ships and the remainder represented the essential increase in revenue to cover the losses on the operation brought about by the increased costs of labor, fuel, repairs, etc. and to allow the carriers a reasonable return on the capital employed. This revenue increase was considered too heavy a burden for Alaska to shoulder and therefore another solution was sought.

The only source of supply of freighters was the laid-up war built fleet of government ships. There were no passenger ships available. If the former could be put into service at a reasonable cost, the solution for freighter service was found.

Interim Plan

It was then determined that by the Maritime Commission's furnishing the needed cargo ships to service the trade and by assuming the necessary hull insurance risks, 55 of the 88% revenue increase could be eliminated. Pursuing that idea, Congressman Henry Jackson was instrumental in obtaining the passage of Public Law 12, passed by the 80th Congress and the Interim Plan came into being. The carriers filed tariffs reflecting the remaining increase.

The Interim Plan was specifically a rate subsidy to the Territory because it eliminated a major portion of the needed revenue increase. The carriers received no "cash in hand." Their decreased operating expenses resulting from the Plan were reflected directly and proportionately in their tariff schedule.

The Alaska Steamship Company, Northland Transportation Company, Alaska Transportation Company and the Santa Ana Steamship Company were the carriers party to this agreement. Their fleets under the contract compared as shown on the opposite page.

Under the contract the companies agreed to operate the vessels in the areas and upon the routes agreed to and approved by the Maritime Commission. The government agreed to charter war-built vessels to the carriers at an annual rate of $1.00 per vessel and assume hull insurance risks on government-owned and privately-owned vessels. Each carrier bore all costs and expenses of his operation, including crew, passenger, cargo and vessel indemnity insurance.

The operators were paid no money whatsoever by the government for the fulfillment of their contracts. Of the voyage profit actually earned from the opera-

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	Privately-owned vessels	Government-owned vessels
Alaska Steamship Company	ALEUTIAN, BARANOF, ALASKA, DENALI, VICTORIA	11
Alaska Transportation Company	NONE	3
Northland Transportation Company	ALASKA (Chartered from Alaska Steamship Co.)	5
Santa Ana Steamship Company	NONE	1

tion of vessels under the contract, the operators were permitted:

(a) 10% per annum (before federal taxes) on capital necessarily employed in the business of vessels, plus

(b) An allowance, if earned, for each privately-owned vessel employed under the plan. The amount of this allowance was specified by the Maritime Commission in the contract.

Additional earnings of the vessels, if any, were to be:

(a) Paid to the government to cover out-of-pocket expenses.

(b) Any balance divided 75% to the government and 25% to the operator.

Any loss was to be borne by the operator involved. Each operator furnished all his working capital.

Objective of Plan

One of the objectives of the plan was to provide a period of time in which an accurate study could be made of the costs of operation of the shipping companies under the agreement which would provide a yardstick for the preparation of permanent legislation.

Books and records were kept according to the requirements of the Maritime Commission and profit and loss statements and detailed reports were rendered as required. Also, during this period the company underwent a complete rate hearing for which detailed analyses were made of every pertinent function of our operations and long and voluminous studies and elaborate financial exhibits submitted at great cost to ourselves in time and effort in order to give the Maritime Commission all information necessary to enable them to determine the propriety of the rate schedule and practices of the company. And yet with the experience of the past, the voluminous reports of the rate hearing, and of the operation of the Interim Plan, neither permanent nor temporary legislation has been passed to aid this important segment of the Merchant Marine.

The Interim Plan operation proved satisfactory and averted the necessity for a further rate increase. Percentagewise, the accompanying chart shows the results of the Alaska Steamship Company operation during the Interim period.

Termination of Interim Plan

In view of the effectiveness of the Interim operation and the fact that a permanent solution had not been worked out, Congress passed legislation providing for the extension of the Interim Agreement until February 28, 1949. However, the authorization was permissive and not mandatory and the Maritime Commission did not choose to extend. Consequently, government aid to Alaska shipping ended June 30, 1948.

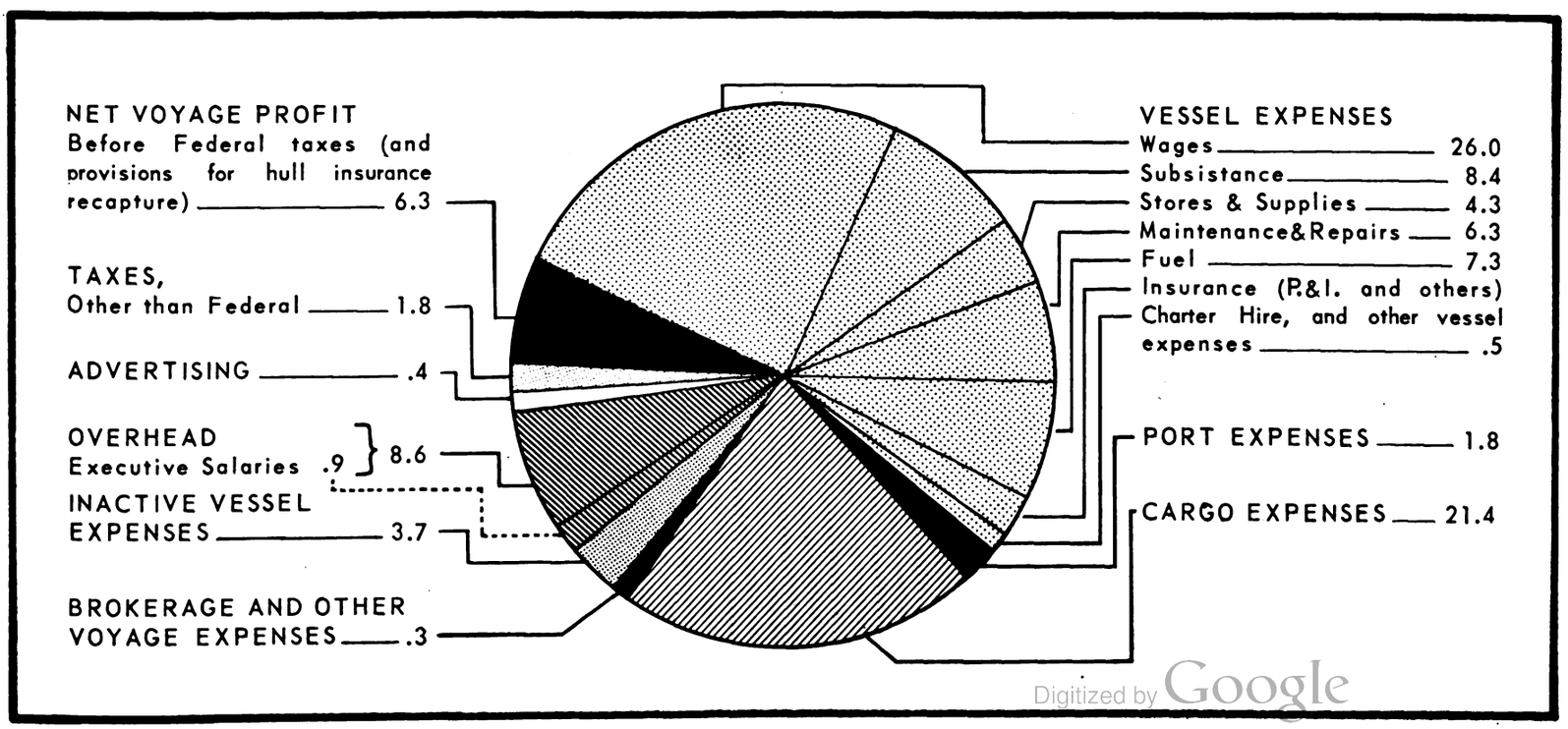
Since that time the Alaska carriers have been on their own, so to speak. They have paid full charter hire of 15% of the ship's sales price per vessel per year or approximately $9,000 per vessel per month, according to the Ship Sales Act of 1946. They also have paid all insurance costs. In addition, portions up to 90% of all excess profits realized on chartered vessels above the amounts specified by the Maritime Commission are recoverable by the government as additional charter hire. Furthermore, the Alaska Steamship Company must now pay all delivery and redelivery expense of chartered vessels. They are also burdened by the four-month minimum charter clause which became effective July 30, 1949, and which makes it impossible for the company to renew for less time than four months any government charters expiring since that date. This is particularly onerous in the Alaska trade because of the great seasonal traffic fluctuations.

Shortly after the termination of the Interim Agreement, the Santa Ana Steamship Company, then serving the Kuskokwim and Goodnews Bay areas, cancelled sailings, and hardship to these sections was averted by the Alaska Steamship Company handling this traffic in conjunction with the Bristol Bay Service.

Consolidation of Lines

Then, during the period of the longshore strike, September 2 to December 5, 1948, the Alaska Transportation Company and the Alaska Freight Express Corporation, a barge line, withdrew from the trade and the Alaska operation of Northland Transportation Company was consolidated with that of the Alaska Steamship Company, leaving the latter company as the sole carrier offering general service to all Alaska.

The Alaska Steamship Company realized a considerable increase in traffic following the above withdrawals, but notwithstanding this traffic increase the company sustained appreciable losses during the last of half of 1948 and the first quarter of 1949. This leads to but one conclusion: either there must be an upward revision of the rate structure or the government must provide some aid to Alaska shipping in order to stabilize water transportation service to this nationally significant and strategic area. We do not believe an increase in rates is the answer.



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FISCAL FALLACIES OF THE PANAMA CANAL

Despite every effort of the government to the contrary the Panama Canal has consistently shown a profit. Without financial finagaling shipping has written off the entire cost of the Canal.

The government has a big problem in the Panama Canal.

Despite every conceivable effort to the contrary, the Panama Canal insidiously insists upon earning a tidy profit!

To ascertain the accuracy of this statement one has only to glance back into the history of the Canal. The original cost of the Panama Canal was $386,000,000. In 1911 Dr. Johnson, a special commissioner on Panama Canal traffic appointed by the Secretary of War, recommended the Canal should be required to yield a return of 3% on capital invested and eventually retire the government investment in the Canal. In 1921 a special commission appointed to advise on matters relating to the Canal recommended an allocation of capital between the Canal proper, subsidiary businesses and national defense. This allocation was made by the Governor of the Canal in 1922.

Between 1920 and 1927 the combined commercial and business capital never exceeded $275,000,000. But by 1927 the Canal profits were getting so high the government officials found them downright embarrassing. To make things look better the Governor slapped on the 3% interest charge on capital investment. However, they still could not hold the profits down. That year the net revenues of the Canal proper represented a return of about 6% on the capital investment, or a surplus of $8,300,000 per year over and above the fixed 3% charge.

In another effort to keep the embarrassing profits down the Governor in his 1928 annual report arbitrarily increased the capitalization of the Canal by including business capital. He then estimated the fixed interest charge on the larger capitalization if computed at 4% and 5%. Then, deducing figures proposing to show an operating loss, he said that if fixed interest charges had been applied from the beginning of the Canal and had been compounded annually, with deficits added to the capital investment, net earnings up to 1928 would have shown a loss.

It was a long way around but he got there!

With profits rolling in to the tune of $18,000,000 per year the Governor in 1929 went a step further and claimed the returns should be based on the whole capital investment of $386,000,000 *plus* accumulated interest charges, or a total of $538,000,000. In this manner he showed that the current return on investment was only about 3% of that new figure. In 1932 this recommendation was put into effect and the interest hiked to $15,000,000 per year, or approximately $.75 per laden ton.

Notwithstanding the fact that national defense was the deciding factor in the construction of the Canal, and notwithstanding the fact that government vessels transit the Canal toll free, no part of the basic cost of the Canal is now charged to national defense. It is true that purely military expenses incurred for the maintenance of the armed services in the Canal Zone are separately charged to national defense, just as they are at Guam, Kwajalien, or other outposts of defense, as is also the cost of facilities constructed solely for national defense, such as the third locks project. But no allocation to national defense has ever been made of the cost of the construction or operation of the basic Canal—the waterway itself exclusive of these purely defense items. Furthermore, numerous expenditures incurred by the Canal authorities, as will be subsequently shown, have been incurred to support national defense personnel or facilities in the Canal Zone and in many instances the Canal authorities have not made appropriate charges to national defense for such items. No part of the transit costs of government vessels has ever been charged to national defense in the Canal accounts.

Failure to segregate such expenses would appear to result in an inequitable burden in computing toll rates on commercial shipping.

Toll Rates

Rates of tolls are set by the President under a delegation of authority from Congress authorizing rates between certain minimum and maximum amounts. The President acts upon recommendations from the Department of the Army. At the present time, rates of toll are 90 cents per net Panama Canal ton for laden vessels and 72 cents per net Panama Canal ton on vessels transiting the Canal in ballast. U. S. and Panamanian Government vessels and warships of the Republic of Colombia transit the Canal toll free. All other ships of all other nations pay the established rates of toll.

Canal revenues from tolls, civil revenues, and net profits on business operations are covered into the Treasury. Funds for current operating expenses and capital construction are appropriated by Congress and for accounting purposes are considered as provided from the tolls and other receipts covered into the Treasury. Practically all receipts other than tolls, civil revenues and business profits are repayable to Canal appropriations and may be re-expended, but the re-expendable receipts are insufficient to provide for operation and maintenance and the Canal is therefore required to submit its expenditure program annually to the Congress.

Studies conducted by the National Federation of American Shipping show that:

(a) In the building, improvement and operation of the basic Canal to date no charge has been made against national defense.

(b) The financial accounts in the government books have been and are being charged with interest at the rate of 3% per annum on funds advanced for the construction and improvement of the Canal not only during the entire period of its operation but during the construction period as well.

(c) The Canal accounts show substantial charges for sanitation, hospitals, public parks and playgrounds, which appear to be civic or civil government expenses, at least in part.

(d) U. S. Government vessels have been furnished free transits which at the prevailing commercial rate have a total value of approximately 64 million dollars.

(e) If interest on U. S. funds excluded, transit tolls paid by commercial vessels, plus tolls forgiven on government vessels, *have exceeded all construction and improvement costs and all operating costs* for transit purposes by about two million dollars.

(f) Inadequate reimbursement is received from the Army, Navy and other activities for certain functions performed for them by the Canal authorities.

(g) Some revenues which otherwise would accrue to the Canal are paid over to "business operations" and the Panama Canal Railroad, both of which show separately reported profits.

Interest Charged to Shipping

The Federation's study with its basic figures verified by the Army, shows that, eliminating interest, commercial tolls plus tolls forgiven on government vessels were sufficient by June 30, 1947, to pay all operating and maintenance expenses of the basic canal since its inception and all of its construction costs and to leave a pro-

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fit of $2,000,000 besides. This result is obtained without credit for $25,398,113.25 reported as "business profits" by the Canal authorities.

The Canal authorities charge theoretical or "computed" interest of 3% on the entire investment in the basic Canal (including $128,991,063 of interest during the construction period). Interest exceeds $15,000,000 per annum and the reported loss for fiscal 1947 was $14,073,443.09 after interest.

The Governor General of the Canal conceded at the Senate Appropriations Committee hearing on the War Department Civil Functions Appropriation Bill in March, 1948, that Canal revenues for fiscal 1949 would be adequate to cover all expenses. (Presumably excluding interest, and continuing the policy of free transits for U. S. government vessels). And in reporting on projected plans for a new Canal under Public Law 280, 70th Congress, First Session, the Governor General stated:

> "During the period from 1914 to 1947, tolls and other revenues amounting to $587,136,000 were deposited in the Treasury of the United States, while the net appropriation expense for the same period was $315,956,000. If tolls at the prescribed rates had been paid on tolls-free vessels of the United States, it is estimated that the additional revenue would have amounted to not less than $64,000,000. *Thus, the Panama Canal has returned to the United States in money or in free services the entire cost of maintenance and operation since its completion and, in addition, all but $74,000,000 of interest at 3 per cent annually on the net capital investment.*"

On the other hand, when the Canal showed substantial profits after the 3% interest charged in the period 1926-1930, it was even suggested by the Canal authorities that the capitalization of the Canal should be increased and that the rate of interest should be increased to 4 or 5%.

Plainly, the interest charge has been an instrument for maintaining rates of toll in excess of the cost of transits.

It is only fair to say that the policy of fixing Canal tolls so as to show a return of about 3% per annum has been in accordance with the recommendations of Congress. What is required is a re-examination of this policy by the Congress to determine whether it is equitable and fair, and whether on a broad long range basis it best serves the public interest.

Shipping Has Paid for Canal

The Federation suggests that since the Panama Canal, as shown by official statements at the time of its authorization and subsequently, was constructed primarily as a defense facility; since no part of the basic cost of constructing, operating and maintaining the Canal has yet been charged to national defense; and since commercial tolls plus tolls forgiven on free government transits over the life of the Canal have been sufficient *before interest* to pay all construction, improvement, operating and maintenance expenses; and since there is considerable difficulty incident to the precise allocation of a fair and equitable part of the capital cost of the Canal to the national defense; a reasonable and practical method of taking the national defense features of the Canal into account in the future would be to eliminate the interest charge in the accounting of the Canal system.

Military and Civil Government Expense Charged to Shipping

The Canal accounts include the expense of performing certain services and providing certain facilities and equipment for Army and Navy installations at the Canal and of providing civil government at the Isthmus.

The accounts of the Canal include expenses to provide highways, water, sewerage, sanitation services and facilities, hospitals, services to government vessels transiting the Canal, air facilities, clinics, dispensaries, quarantine and immigration functions, schools, police and fire protection, physical education and recreation facilities, libraries and magistrates courts, to name a few, which are used by the military and naval personnel and services in the Canal Zone.

Recurring statements in the reports of the Governor General of the Canal show that substantial increases in net expenses of numerous activities of the Canal have been directly attributable to the increases in the number of military and naval personnel located in the Canal. In the annual report of the Governor for fiscal 1940, for example, it is stated:

> "In the foregoing table it may be seen that there has been a net increase of 1,747 in the number of gold employees in the rolls of the Panama Canal and the Panama Railroad Company. This is an increase of practically 50% and with a few minor exceptions it may be seen in every unit of the organization. This is the direct result of the great volume of construction activity now being carried on locally in *national defense* programs. *** Because of the general increase in activity it has likewise been necessary to increase the force in numerous other units not actually engaged in construction, such as the Accounting Department, the Health Department and the Commissaries." (Emphasis supplied.)

This statement is reiterated in the 1941 report of the Canal.

In his annual report for 1941, the Governor of the Canal showed that the expense of schools in the Canal Zone was largely attributable not to shipping but to military forces in the Canal Zone. He stated:

> "During the past year, careful surveys were made of the plans for the expected increase in population of the Canal Zone both in military forces and in civilian forces engaged in construction activities. The school administration keeps informed as to the anticipated changes and rearranges the plans for the expansion of educational facilities in accordance with such changes."

In the same report he stated:

> "The recreational facilities provided by the playground section are used extensively not only by the civilian employees and their families, but also by the U. S. defense forces stationed on the Isthmus. Practically all facilities are utilized to their capacity during visits of units of the U. S. Navy."

Of the cost of magistrates courts at Balboa, it was stated:

> "The increase in cases handled, 83% is attributed to the gain in personnel of the Panama Canal and the Army and Navy organizations during the year."

Of the magistrates courts at Cristobal, he stated:

> "The increase over the previous year in cases handled, amounting to approximately 134% is attributed to the increase in personnel of the Panama Canal and the Army and Navy organizations during the year."

The Governor, in his report for 1940, stated of expense for the expansion and improvement of hospital facilities at Gorgas Hospital:

> "The increase in the Army and Canal Zone personnel makes the alteration and installation of necessary facilities imperative for adequate hospitalization."

Certain portions of the Canal, like the width and depth of channels at certain points, have been constructed, maintained and operated only because they are necessary to accommodate the beam and draft of certain war vessels, and yet the entire expense of their operation and maintenance is included in the net annual appropriation which in the accounts of the Canal "are considered as provided from the tolls and other receipts covered into the Treasury." (Governor's report, 1946, p 94.)

The Panama Canal accounts also include all payments ($430,000 per annum) to the Republic of Panama under the treaty provisions with that country governing compensation for the Isthmus, and these payments are likewise "considered as provided from the tolls." (Governor's report, 1946, p. 94.)

Business Losses Charged to Shipping

The Panama Canal authorities conduct some operations which are treated as business operations because charges are made to users of the services. The electric power system, the water system, the mechanical division, quarters for employees, general storehouses, a motor transportation division, a building division and the Panama Canal Press are examples. In general these show profits. If they lose money their net expense is "considered as provided from the tolls and other receipts covered into the Treasury."

Similarily, numerous services are performed by the Panama Canal Railroad and paid for out of Panama Canal appropriations. These expenses are "considered as provided from the tolls." The

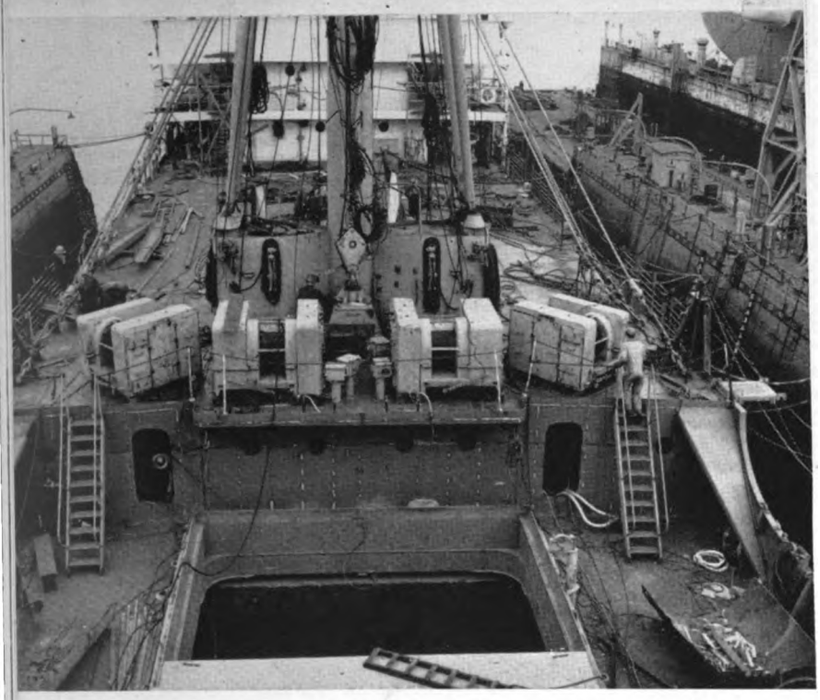
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Scene showing placement of heavy bow plating on the NORTH STAR at the Seattle Division of Todd Shipyards Corporation.



ABOVE: Following partial conversion at the Seattle Division of Todd Shipyards Corporation, the NORTH STAR is shown being readied for initial runs to isolated communities in the Arctic and Bering Seas for the Alaska Native Service.

BELOW: New poop deck extension on the NORTH STAR showing the old mast house and the rigging arrangement relocated on the extended poop deck. Vessel undergoing 2-step conversion at the Seattle Division of the Todd Shipyards Corporation.

"NORTH STAR" CONVERTED FOR ALASKA SERVICE

C1-M-AV1 converted by Todd to permit increased passenger capacity for native service supply ship.

One of the most interesting and important conversions of the year was started in May at Todd Shipyards Corporation, Seattle plant, when they commenced work on the contract of altering mv "COASTAL RIDER," a C1-M-AV1 freighter to a combination vessel for the Alaska Native Service, Department of the Interior. The work involves rather extensive changes in the ship so that Native Service employees and government wards may be carried as passengers and also to provide hospital facilities and for the delivery of supplies to Alaska Native Service stations including those on Bering Sea, Wainwright and Point Barrow on the Arctic Ocean.

The vessel is to be renamed "NORTH STAR" and will replace the famous wooden motor ship "NORTH STAR" which has been used in this service for many years, but which is, by reason of long service, no longer considered fit for the arduous voyage into the far north. In her extensive career, the old "NORTH STAR" made annual voyages to Point Barrow except during the period of the Second World War, when she was in the Navy on the Greenland Patrol. Shortly before World War II she was used as a supply ship for the well-known Byrd expedition to the South Polar Seas.

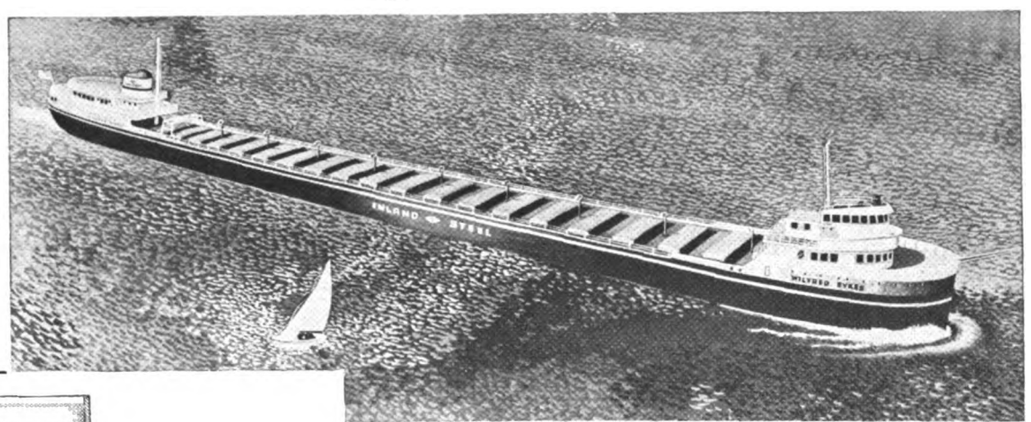
Strengthening Plates

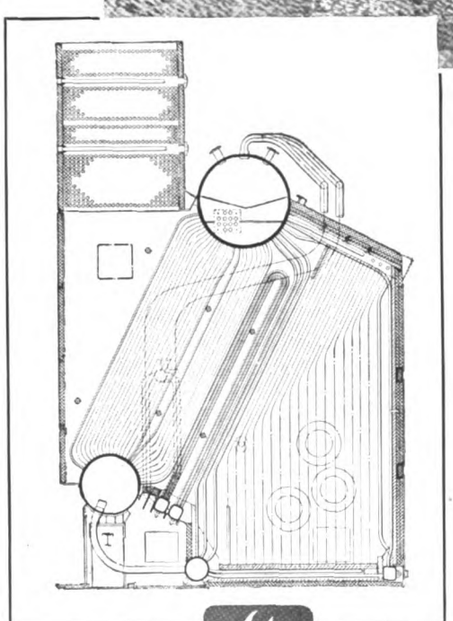
In order to fit the new "NORTH STAR," which is an all-welded steel vessel 338′ long, 50′ beam, and 29′ molded depth, for her new duties, the whole bow was strengthened by doubling plates, intermediate frames, stem and forefoot reinforcement for navigation in the heavy ice frequently encountered around Point Barrow. While in no sense an ice breaker, she will frequently have to navigate in surface ice and push her way through ice floes and, unless reinforced, considerable damage could be done to the bow of the ship. Since it is frequently necessary to clear water intakes of ice in slushy seas, steam connections are being provided to all sea chests.

The new service will require space for thirty-two cabin passengers, hospital berths for sixteen, nurses' quarters, laboratory and x-ray facilities, all of which

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C-E Boilers chosen for Lakes largest ore carrier





S. S. Wilfred Sykes, building at Lorain Yards of American Ship Building Company for the Inland Steel Company. (Inset) Sectional elevation of C-E Marine Boiler, Type V2M, two of which will power the new vessel.

When the ultra-modern ore carrier *S. S. Wilfred Sykes*, recently launched at the Lorain Yards of the American Ship Building Company, goes into service a few months hence, the Inland Steel Company will add to its fleet the largest and fastest ore carrier ever built.

The new vessel is the largest ever built on the Great Lakes—678 feet overall with a 70-foot beam and a bulk cargo capacity of 20,000 tons. It will be the fastest of its kind yet built—capable of 16.5 miles per hour—powered by geared turbines that develop 7000 shaft horsepower.

Steam for the turbines will be generated by two C-E Marine Boilers, Type V2M, having a normal capacity of 32,000 lb of steam per hr and an overload capacity of 48,000 lb. The boilers will be oil-fired and will operate at a pressure of 450 psi (design pressure 525 psi) and a total temperature of 750 F.

B-329

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are provided above the main deck from midships aft. Since all these quarters are above the main deck, little change is made in her cargo carrying capacity other than that the area for deck loads reduced by approximately one-third. Covered space for the accommodations is provided by extending the poop forward from frame 104 to a little forward of amidships. The extended poop deck forms a very pleasant promenade deck, much of which is sheltered by the extension of the boat deck to carry two additional life boats. The dining saloon is just forward of the existing crew's quarters, which have been generally rearranged to provide for the service space and additional personnel required. A roomy and comfortable day lounge in a steel deck house is being fitted directly above the dining salon space which has been provided by reducing the length of No. 3 cargo hatch, trunked up through the accommodations.

Main Deck Arrangement

In arranging the accommodations on the main deck, an interesting structural problem presented itself since the original design of the ship was such that No. 3 tween deck and hold were virtually free of pillars with long span girders above the main deck, forming the coamings of No. 3 cargo hatch. Since these long hatch coamings had to be removed, the entire structural support of the main deck and the new superstructures above it had to be completely redesigned, using shorter span girders and pipe pillars in the holds. These are so arranged that interference with stowage of cargo is minor, yet the vessel's hull is well stiffened and supported throughout the area.

In order to care for the added hotel load, a pantry is being fitted to serve the main dining salon, most of the galley sheet metal work is being replaced, and the present oil-burning range replaced by a modern electric range of large capacity. Additional store spaces are provided, notably in way of old cargo hatch No. 4 which is being suppressed. All food service is on one deck, thus eliminating dumbwaiters and stairway travel for mess attendants. Special provision has been made for food service to isolation ward patients with contagious diseases so that none of the dishes, cutlery, etc., used for their service need find its way contaminated back to the galley since sterilizing equipment for completely servicing these dishes is provided in the sick bay pantry.

Cold Storage Space

The existing cargo cold storage space is in hold No. 4 which, under the conversion, disappears as such and becomes a space for additional potable water stowage in four tanks, separate from the hull, built into the space. The additional tanks will give her a fresh water capacity of seventy-six thousand gallons, which will be used as all-purpose fresh water. The cold storage capacity is removed to the forward end of hold No. 3. The refrigerating machinery remains in its present location and used as is, but repiped to the new hold which will be used in the transportation of frozen reindeer carcasses southbound.

The two king posts and their cargo booms forward of the bridge and the king posts and booms serving No. 4 hatch disappear in the conversion, leaving the ship with less top hamper and cleaner lined. The mainmast is rigged substantially as before, but is eight feet higher due to the construction work at the main deck. No change is made in the forward rigging or in hatches No. 1 and 2, therefore these long hatches and the heavy lift gear forward will remain for bulky freight handling.

Since the vessel will have to discharge cargo and passengers at many places in the far north where no port facilities of any sort exist, she will have to be anchored off shore in open roadsteads and transfer cargo and passengers to and from the beach. The ship is therefore provided with, in addition to life boat equipment, a Diesel powered towing launch with a small cabin for protection of passengers, and a steel lighter, which will serve the dual purpose of landing cargo and transferring oil supplies ashore from the ship. In order to make her approaches to exposed anchorage safer, the vessel is being fitted with a hawse pipe in the stern, an electric windlass, chain cable, and a 2240 pound stockless anchor.

Radar Equipped

For greater safety in navigation and piloting, the vessel is being fitted with Sperry radar, and radio telephone equipment capable of communicating with all Alaska Native Service Stations, was being installed for greater efficiency in dispatching ship's business with these stations while under way.

While the plans show a relatively limited conversion since only about fifty persons beyond her crew as a freighter will be carried, the same general idea in conversion could be carried out for a much larger passenger list by extending the poop forward to the foremast and installing a tier or two of midship deck houses, for which the stability is ample. Such a conversion, with the navigating bridge moved forward, would make a very handy general purpose combination cargo and passenger ship, suitable for a number of trades.

Plans and specifications covering the work were prepared by Carl J. Nordstrom, Seattle consulting naval architect, and the work at Todd's was carried out under his supervision with the construction work being divided into two stages. The first included the ice strengthening and the basic structural work for the passenger accommodations and the installation of the radar, after which the vessel will be withdrawn from the shipyard for a voyage to Point Barrow to deliver the season's supplies. Upon her return from this voyage early in the Fall, the "NORTH STAR" will return to Todd's for completion of the work described above and it is expected that she will be fully equipped for service early in 1950.

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The MARGARET LYKES was the 142nd American merchant ship to be warranted by the Navy as a Naval Auxiliary in time of war and the seventh such vessel so designated in the Gulf.

SS RABAN, new 402-foot oil tanker for The Texas Company built by Ingalls Shipbuilding Corp., of 10,500 tons displacement, 7,800 dwt with a 61'6" beam, with a designed speed of 12 knots, she will have a capacity of 61,620 barrels of crude oil.



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LET'S TRY DIESEL POWER IN A PROTOTYPE SHIP

The Maritime Commission has funds for two experimental ships. Will we pass up this opportunity to make a comparative study of Diesel vs. steam power?

The U. S. Maritime Commission has an opportunity, if indeed not an obligation, to carry out an experiment which will prove of inestimable value to the steamship industry. It can give the Diesel engine manufacturers a chance to prove their claim that the Diesel engine is an economical propulsion unit for American-operated ships.

Congress has approved the funds for construction of two prototype ships. The Maritime Commission has already drawn up plans for these and has called for bids on the first one.

Known officially as the C3-S-DX1 design, these vessels are to cruise at 18.5 knots developing 12,500 SHP with a maximum continuous output of 13,750 SHP. (For full particulars on these prototype ships see the July 1949 issue of The LOG, pp. 33-34.) The bids sent out called for geared turbine propulsion equipment. Since two of these prototype vessels are to be built, it seems reasonable to contend that the Maritime Commission should power one of them with Diesel engines.

The Mississippi Shipping Company and the Moore-McCormack Lines have both been carrying on research in the field of steam vs. Diesel propulsion at their own expense. However, since the types of ships and the varying conditions under which they operate make it extremely difficult to draw accurate comparisons, there will always be room for doubt in any published results. An indication that Mississippi has favorably interpreted the Diesel engine performance is apparent from the fact that the company is seeking to build a 22,000-ton Diesel-powered liner.

Since the reason Congress appropriated the money for these prototype ships was to experiment with a design which would prove most readily adaptable to another mass-production effort, the Maritime Commission might be doing a disservice to the country if it overlooks the demands of the Diesel manufacturers for a chance to prove the worth of their engines. It is hardly an experimental undertaking when one considers the fact that American-built Diesel powered "C" type ships are giving our foreign competitors excellent service, day in and day out.

One of the reasons why we plodded through this last war with slow-moving Liberty ships powered by steam reciprocating engines was the inability to procure sufficient steam-turbine engines. This was because of the large demand for this type of equipment by the Armed Forces and other essential industries. Although this situation has been modified by the construction of turbine plants, there is no reason to expect that the greater demands of another war will not find us in substantially the same position. The Diesel engine manufacturers have pointed out to the Commission that they now have the plants, tools, jigs, and other facilities to mass-produce Diesel plants for powering our ships.

The prototype ship requires a total normal SHP of 12,500 and a maximum continuous output of 13,750 SHP. The Diesel engine manufacturers point out that within the same limits of space now assigned for the geared steam turbine a Diesel engine of 12,500 SHP can be installed. This power can be applied either through geared Diesel, the natural competitor of the geared steam turbine, or through Diesel electric drive. They stress the fact that these engines are all now in successful operation aboard ship.

The Diesel manufacturers have also pointed out to the Commission they can increase the range of the ship while still maintaining the same speed. The selection of geared or electric drive would affect the range, but this selection would be one which the Commission could evaluate. According to the manufacturers' figures, the Diesel geared drive would have a maximum fuel consumption of .41# fuel per SHP-hour for all purposes when developing 12,500 SHP. They estimate the electric drive would consume .45# per SHP-hour for all purposes.

The present prototype design employing steam turbines has, according to the published figures of the Maritime Commission, a cruising radius of 14,000 miles at the designed speed of 18.5 knots. A corresponding geared Diesel installation, according to the builders, would increase this radius by 6,000 miles to 20,000, assuming the same bunkering capacity for each type vessel. There would be a smaller increase in the case of the electric-drive, since there is an efficiency differential between the two types, which would provide an increase of 4,000 miles cruising radius to 18,000.

Other factors which enter into the selection of Diesel power include the greater weight of the engine itself. On the favorable side of the ledger, the Diesel people have pointed out to the Commission that with both types of ships ready for sea with a 30-day supply of fuel aboard, the Diesel would be the lighter because of its lower fuel consumption, and would result, theoretically, in more space for the pay-load.

One of the most consistently heard objections to the use of Diesel engines in American ships, is the fact that we do not have sufficient numbers of qualified engineers to man the Diesel ships. Manufacturers point out this argument is comparable to saying we cannot build refrigerated ships because of a lack of trained refrigeration engineers. They also cite the railroads as an example in this respect. Their crews were also brought up in steam, but they have found it possible to switch to Diesel and provide the trained men to run their locomotives. The manufacturers discount the higher pay for Diesel ship crews on the basis that fewer men are needed to operate and maintain the Diesel than its equivalent steam plant.

These arguments are not new to the industry. They have been given lip service for years. But what is new is the fact the Maritime Commission is about to construct two experimental prototype ships.

Representatives of the Diesel Engine Manufacturers' Association, appearing before a meeting of the full Commission, feel that their cause was given a sympathetic hearing. At the request of the new Maritime Commission Chairman, Major General Phillip Fleming, they have appointed a technical committee to work with the technical staff of the Commission.

There are prejudices against Diesel power in ocean-going ships which are natural in the light of a tremendous amount of steam experience. But it would seem to be the duty of the Maritime Commission to approach the situation with an open mind, and if feasible—which it certainly seems to be—specify Diesel power for one of the two prototype ships.

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New Orleans Grain Elevator Hits New Record

According to the Board of Commissioners, Port of New Orleans, the Public Grain Elevator of the Port hit an all-time high of 66,528,051 bushels shipped overseas in the fiscal year ending June 30, 1949, it was announced by E. H. Lockenberg, port general manager.

"This is a 50 per cent jump over the 1947-48 record of 42,446,903 bushels, highest figure prior to this year," Lockenberg said.

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BULL LINES ENTERS PASSENGER SERVICE



CAPTAIN ELLIS B. HUDGINS on the bridge of his new command, the SS PUERTO RICO, latest addition to the Bull Lines' fleet.

Bull Lines entered the postwar passenger business last month after converting the Agwiliner BORINQUEN at a cost of $750,000 into a snappy new cruise liner renamed the PUERTO RICO. The conversion was done by the Maryland Dry Dock Company of Baltimore according to plans and specifications drawn up by Gibbs & Cox, of New York.

Chief among the sweeping changes in the ship is the reduction in passenger capacity from 377 to 199 and the elimination of all inside staterooms. To give the ship's silhouette the "new look," the after mast was reduced 58 feet, the forward mast was shortened 30 feet and a tripod radar mast, 29 feet high, was added on top of the wheelhouse. The 30-foot cutaway appearance in the deck profile forward of the bridge has been plated up and the old rounded stern has been restyled by a step-down configuration from upper promenade to main deck.

Incorporation of sofa berth and concealed wall berths in every stateroom gives the vessel the most modern type of accommodations. Each stateroom is both a sitting room and a bedroom which the passenger can set up himself by a twist of the wrist.

Two-thirds of the rooms now have private bath or toilet facilities in contrast to the relatively few before. Among the more luxurious of the 74 rooms now available are the "Fortaleza" and "Hispaniola" suites with separate sitting room and bedroom, two de luxe rooms and eight special rooms, beautifully decorated.

An outstanding change was the creation of a new Coral Cafe on the upper promenade deck by combining the old smoking, tea rooms and bar, installing an in-



Main salon aboard the PUERTO RICO has been completely modernized and redecorated.



Interior of the medium-priced stateroom aboard the PUERTO RICO. Berths close up into the bulkhead during the day to make it a living room.

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SS PUERTO RICO arriving in New York Harbor after complete reconversion at Maryland Dry Dock Company in Baltimore. Biggest alteration in this ship, which will be the only American passenger liner serving Puerto Rico, was a reduction in passenger capacity from 377 to 199. If you don't recognize the profile of the old BORINQUEN it's because Bull Lines added a new stack, built up the forward well deck, and altered masts to streamline the vessel.

door and outdoor dancing area, and piping in recorded music.

The ship itself received a thorough overhaul mechanically. Engines, boilers and turbines were overhauled. Cast iron sea valves were replaced by steel. A Raytheon Pathfinder radar set of the latest type was installed. The PUERTO RICO is 429 feet long, 59.5 feet in beam and displaces 10,920 tons. A 6,000 H.P. turbine drives the ship at 16 knots.

Fiscal Fallacies of the Panama Canal

(Continued from Page 39)

Panama Canal Railroad Company has shown very substantial profits from its operations and the rates paid from Panama Canal accounts for services performed by the railroad have produced a very substantial return on the investment in the railroad. The inter-relationship of these accounts would appear to be a proper subject for study in determining the overall fiscal policy of the Panama Canal.

The Federation does not suggest the abolishment of tolls and free transit of the Canal, notwithstanding such a policy has always been in effect at other American canals and waterways. The Federation does not suggest a burden upon United

(Continued on Page 48)



The Coral Cafe features cool air and tall drinks (Puerto Rican rum, of course) with indoor and outdoor dancing. Public spaces are colorful and comfortable.



Something like this can make shipboard travel a pleasure. Open deck space with plenty of sunshine for a warm weather run will make the new PUERTO RICO popular.

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NAVY TAKES OVER CONTROL OF

ARMY TRANSPORTS

New Military Sea Transportation Service under Navy takes over all sea operations of ATS. Vice Admiral William Callaghan to head new MSTS.

Responsibility for all ocean transportation for the Armed Forces was assigned to the Department of the Navy by a directive issued by Secretary of Defense Louis Johnson which establishes a Military Sea Transportation Service within the National Military Establishment.

The directive assigns control, operation and administration of the unified agency to the Department of the Navy and directs that it shall be commanded by a Flag Officer appointed by the Chief of Naval Operations with the approval of the Secretary of the Navy.

To facilitate initial operation of MSTS. Secretary Johnson directs not only the transfer to the unified agency of government owned vessels now assigned to the Army and Navy for sea transportation of personnel and material, but also of personnel, facilities, equipment and funds previously provided the several services for sea transport operation and the provision of logistic support.

Consolidation of those parts of the several service agencies which will constitute the MSTS is ordered to be initiated not later than October 1, 1949, and completed as soon thereafter as practicable.

Initially, under the provisions of Secretary Johnson's directive, the MSTS will operate 223 personnel transports, cargo vessels and tankers.

The vessels to be assigned from the Naval Transportation Service to the MSTS include 9 personnel transports, 12 cargo vessels, and 73 tankers, a total of 94.

Now under Army ownership and to be transferred to the MSTS are 129 ocean-going vessels, including 66 passenger transports, 58 cargo transports, and 5 tankers.

The Army also has currently under charter 191 vessels, for which the MSTS can renew charters if they are needed. These include 43 vessels under bare-boat charters, 38 cargo ships, 4 passenger ships and 1 tanker. Under bare-boat charter, the Army charters the vessels and operates them with Army crews. The remaining 148 vessels, including 147 cargo ships and 1 reefer, are now under time-charter to the Army. Time-chartered vessels are privately owned and manned.

In all, ocean-going vessels now either owned, operated or chartered by the Army total 320.

The 94 vessels being assigned by the Navy to MSTS do not include all transports, cargo vessels and tankers operated by the Navy. The vessels not being assigned to MSTS by the Navy are classed as either combat vessels or vessels used for the mobile support of the fleet.

The Air Force operates no transports, cargo vessels or tankers.

In addition to its peacetime operations the MSTS is charged with responsibility for preparing plans for its employment and expansion in time of national emergency. These plans will be based on policies and directives issued by the Joint Chiefs of Staff and the Munitions Board. Execution of such approved plans requiring the services. facilities and personnel of commercial carriers and negotiations therefor, are the responsibility of the Commander of MSTS who is directed to consult and coordinate with the appropriate agencies of the National Military Establishment.

Assignment of sea transportation to the Navy and of land transportation to the Army was recommended last December by the Joint Chiefs of Staff to the then Secretary of Defense, James Forrestal. At a press conference on December 15, 1948, Mr. Forrestal announced that he had approved the recommendation and had asked the Joint Chiefs of Staff to make a detailed study as to the procedure which should be followed. The directive issued by Secretary Johnson, assigning sea transportation to the Navy, was based on that study.

Responsibility for the operation of common-use military land transportation including highway, railroad, pipeline and inland waterway, was assigned to the Army on March 15, 1949. Details of the consolidation of responsibility for land transportation under the Army are being worked out by the Joint Military Transportation Committee of the Joint Chiefs of Staff and will be submitted to Secretary Johnson for approval.

The directive issued by Defense Secretary Johnson is as follows:

Military Sea Transportation Service

Pursuant to the authority vested in me and in the interest of greater efficiency and economy, there is hereby established within the National Military Establishment, under the direction and control of the Department of the Navy a unified sea transportation organization to be known as the Military Sea Transportation Service (hereinafter referred to as MSTS), which shall have the purpose, composition, authority and responsibility hereinafter described.

1. PURPOSE

The MSTS is established in order to provide, under one authority, control, operation and administration of ocean transportation for personnel (including the transportation of sick and wounded), material (including petroleum products), mail and other cargoes for all agencies or departments of the National Military Establishment (excluding personnel and cargo transported by units of the fleet) and as authorized or directed for other government agencies or departments of the United States subject to established priorities.

2. COMPOSITION

a. The MSTS shall consist of the government owned vessels now assigned to the Department of the Army and the Department of the Navy for the purpose of providing sea transportation for personnel and material of the Armed Services (except those vessels assigned to the combatant fleets of the Department of the Navy) and for all other vessels acquired for the purpose, together with the personnel, facilities, and equipment necessary to support the operation. The term "Vessels" as used herein shall include those ships and craft employed in transoceanic, intra-theater, and coastwise operations, but excludes those used or required by the Departments of the Army, Navy and Air Force in harbors or inland waterways.

b. The MSTS will be commanded by a Flag Officer appointed by the Chief of Naval Operations subject to the approval of the Secretary of the Navy.

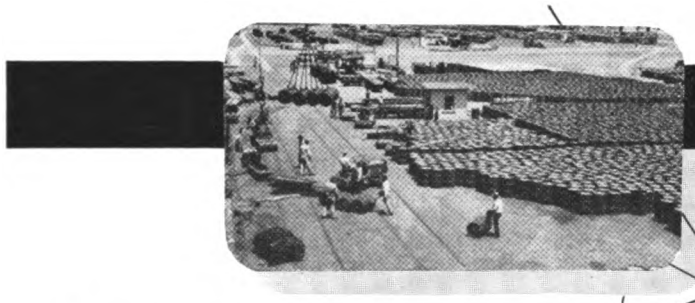
3. FUNCTIONS AND RESPONSIBILITIES

a. Subject to the authority and direction of the Chief of Naval Operations the Commander MSTS, will exercise direction, authority and control of the MSTS.

b. The MSTS will be responsible for:

1. The control, operation and administration of government owned vessels assigned, and all other vessels acquired for the purpose of providing a carrier service of ocean transportation of personnel and material for the Armed Services, and, as authorized, for all other government agencies of the United States, subject to priorities and policies as directed by the Joint Chiefs of Staff (Joint Military Transportation Committee) and the Munitions Board.

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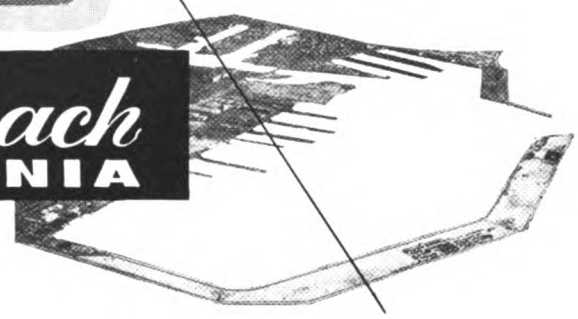
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2. The establishment, control, and adminstration of organization units ashore. worldwide, necessary for the administration and operation of MSTS. (Existing organizations and facilities of the three Services will be utilized by MSTS as is practicable and necessary and as directed by the Secretary of Defense.)

3. For the procurement of vessels outside of the MSTS fleet by bareboat, time and voyage charter, and the procurement of space in commercial shipping as found necessary.

4. The establishment of an adequate system for reporting requirements for transportation of passengers and cargo within the three services, and for such other operational information as considered by MSTS to be necessary for the efficient employment of MSTS vessels, and for the chartering of commercial vessels and the procurement of commercial shipping space.

5. The administration of priorities for sea transportation of material and personnel of the Armed Services in accordance with the policies and procedures established by the Joint Military Transportation Committee.

6. In coordination with pertinent government agencies, the preparation of recommendations for the design, specifications, and equipment of transport vessels. In collaboration with pertinent government agencies, the making of studies, analyses and recommendations for the improvement and standardization of sea transport control practices, procedures, reports, forms, and coordination of traffic movements.

7. The control and administration of maintenance, repair and alterations of all government owned vessels assigned to MSTS plus the maintenance and repair of vessels under bareboat charter.

8. The preparation of plans for the employment and expansion of MSTS in time of national emergency. These plans will be based on the policies and directives issued by the Joint Chiefs of Staff and the Munitions Board. The execution of such approved plans requiring the services, facilities, and personnel of commercial sea carriers and negotiations therefor, are the responsibility of the Commander MSTS who will consult and coordinate with the appropriate agencies of the NME.

9. The development and maintenance of such cost accounting records and operation statistics as will reflect the degree of efficiency and economy of the operations conducted by MSTS and show the utilization of funds, manpower and equipment assigned to MSTS. Suitable reports will be made to interested agencies of the NME.

10. The determination of the requirements of MSTS with respect to personnel, equipment, material, facilities and services, and advising the Chief of Naval Operations in the matters.

11. The preparation of budgetary and other fiscal requirements of MSTS as coordinated with participating agencies in accordance with directives of the Secretary of Defense on fiscal matters.

12. The administrative control of funds received by transfer, by reimbursement or received in payment for services rendered in consonance with policies directed by the Secretary of Defense.

13. The approval of stowage plans and their proper implementation. The Armed Service concerned will have representation with MSTS in the preparation of detailed stowage plans affecting the shipments made by that service. The movement of cargo of the three Armed Services to the side of the ship is a responsibility of the department owning the cargo. Stevedoring service will be arranged for by the port command when government port facilities are being utilized. Stevedoring service will be arranged for by the department owning the cargo when commercial port facilities are used. The responsibility for the implementation and execution of loading or unloading rests with the activity furnishing the stevedoring services. The responsibility of MSTS for cargo begins when the cargo is finally stowed on board and accepted by the commanding officer, and terminates when the cargo is accepted free on board ship at destination.

14. The coordination between the services and MSTS of the booking of passengers and cargo. The Armed Service concerned will have representation with MSTS in the approval of detailed plans affecting the movement of personnel and cargo of that service.

15. The control of all passengers on MSTS vessels. By agreement between MSTS and the Armed Service concerned, administrative control may be exercised through commanders of personnel assigned by the Armed Service concerned. The responsibility of the MSTS begins when passenger embarks on the ship and terminates when the passenger disembarks from the ship.

16. The coordination of MSTS activities with the administration, management, and operational control of port facilities. Such harbor tugboats and harbor facilities as are available and are necessary in connection with the operation of vessels will be provided for the use of MSTS through mutual agreements of all departments concerned and as local conditions permit.

4. IMPLEMENTATION

a. The Departments of the Army, Navy and Air Force will:

1. Take necessary action to facilitate the efficient and economical operation of MSTS, such action to include the temporary loan of military personnel, transfer of civilian personnel, and furnishing of facilities, equipment and funds which have previously been provided to the respective services for sea transport operations and the provision of logistic support. Temporary loan of Army and Air Force military personnel will terminate by April 1, 1950, subject to minor exceptions as agreed to between services for key personnel. The respective secretaries are hereby authorized to issue such orders as may be necessary to effectuate the purposes of this directive.

b. The consolidation of those parts of several service agencies which will constitute the MSTS will be effected under the direction and control of the Chief of Naval Operations, with the minimum loss of continuity of operations. It shall be initiated not later than 1 October 1949 and completed as soon thereafter as practicable. When the consolidation has been completed the Secretary of the Navy will so inform the Secretary of Defense.

c. The operation of ports is a responsibility of the separate services.

d. The rights and privileges of Civil Service personnel, now employed by the Army and who may be transferred to the Navy will be protected.

e. The Department of the Army and the Department of the Air Force will assign liaison personnel to the MSTS for the purpose of representing their interests in MSTS.

f. The responsibilties of the Munitions Board for certain transportation matters as agreed upon between the Joint Chiefs of Staff and that Board and currently defined in Tab "A" to J. C. S. 1672/19 will govern the MSTS in discharging its functions and responsibilities in those matters.

g. The Secretary of Defense will take such steps as are necessary, including the requesting of implementing legislation, to make all statutes, laws and regulations which are now vested in the Department of the Army, with such changes therein as may be necessary, applicable to the transferred functions, properties, personnel, records, and other things transferred from the Department of the Army to MSTS.

‡ ‡ ‡

Fiscal Fallacies of the Panama Canal

(Continued from Page 45)

States taxpayers in the form of annual appropriations for the operating expenses of the Canal. What they do propose is that inasmuch as all money advanced by the government for the construction and improvement of the Canal has now been repaid (if interest is excluded), the future operation of the Canal for transit purposes should be borne from tolls collected from all vessels furnished such transit under a tariff designed to defray such expenses without deficit and without profit or interest.

The suggestion advanced by the Federation is that the interest charge on funds advanced for the building and improvement of the Canal is the minimum contribution which can reasonably be made in behalf of national defense.

In a few words, the American shipowners are advancing the proposal that national defense shall at least bear the interest charges on government funds advanced, and that as to the future there shall be charged against all ships using the Canal a toll rate reflecting only the actual operating costs of the Canal for transit purposes.

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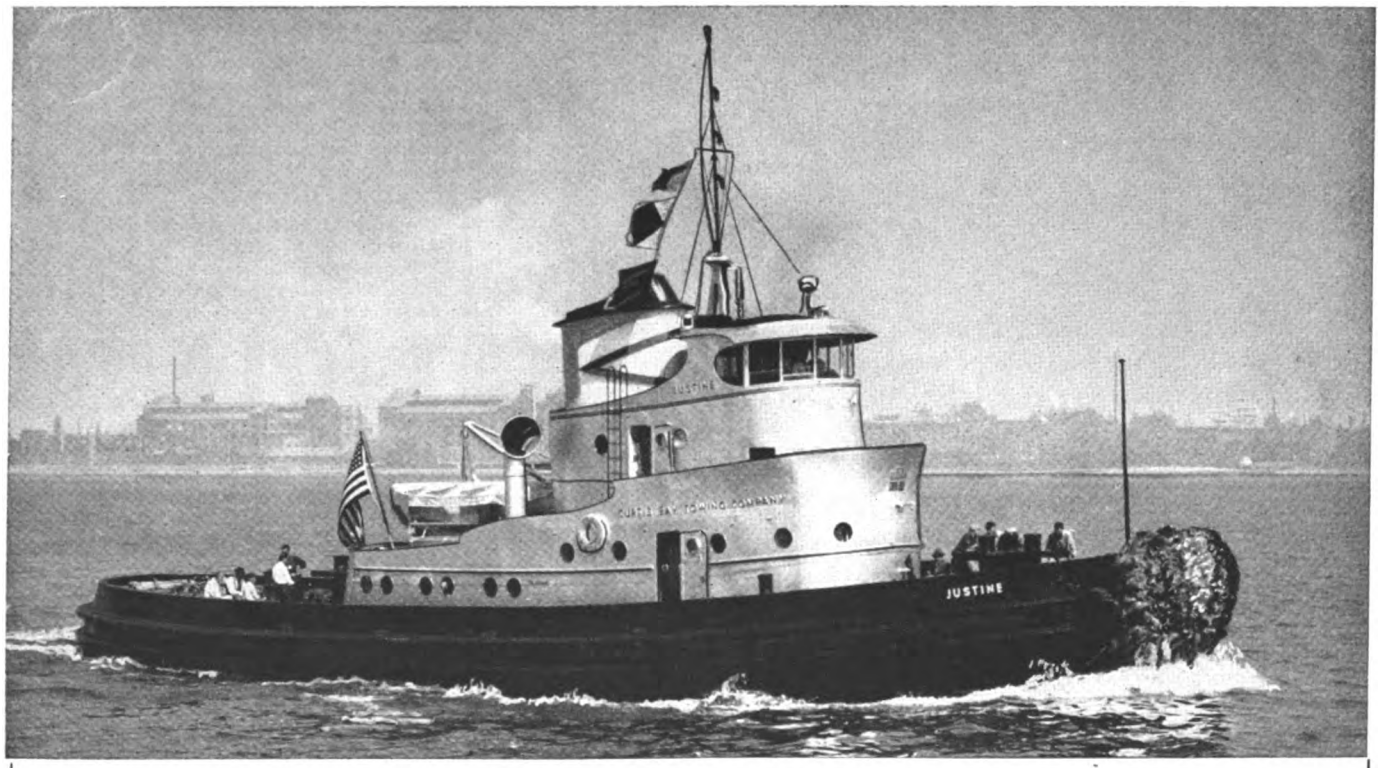
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Representing the biggest conversion job completed in the Baltimore harbor since the war, the ss TARSUS was turned over to her owners, the Turkish Government, and left for Istanbul the first part of June. "The Pearl of the Turkish Merchant Marine," as she is now being referred to, will operate in the Mediterranean-Black Sea Service, carrying a maximum of 618 passengers.

Formerly the ss EXOCHORDA, one of the original Four Aces, beautiful Mediterranean liners of American Export Lines, the ship was taken over by the Navy in 1940 and converted into a combat transport and named the U.S.S. HARRY LEE. During her naval career she participated in the invasions of Sicily, Tarawa, Kwajalein, Aitape, Guam, Lingayen Gulf and Iwo Jima.

After VJ-Day the vessel was engaged in carrying troops home to the United States. Last year Bethlehem Steel Company was awarded the contract of converting her back into a passenger vessel, and on November 19, 1948, she arrived at the Baltimore Yard.

Principal features of the ss TARSUS are:

Length, between perpendiculars	450 ft.
Molded breadth	61 ft. 6 in.
Depth to shelter deck, molded	42 ft. 3 in.
Depth to second deck, molded	33 ft. 3 in.
Loaded draft	27 ft. 11 in.
Gross tonnage	9359
Net tonnage	5627
Speed	17 Knots
Normal Shaft horse power	7200

The vessel is powered by a triple-expansion turbine, driving a 36,020 lb., 4-blade propeller through a single reduction gear. Steam of 350 lbs. and 636°F. is generated in four 3-drum, water tube boilers with a total hourly capacity of 80,000 lbs.

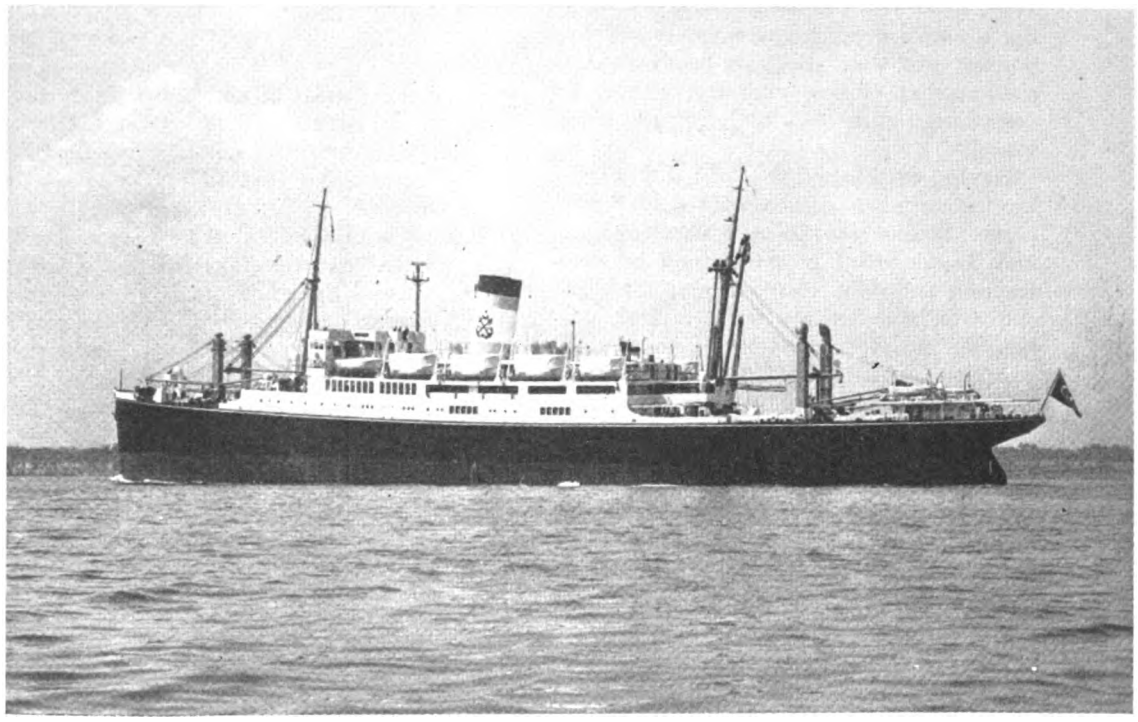
Upon arrival at the yard the vessel was placed on dry dock where the bottom was cleaned to permit surveying and examination of the shell plating. A few plates were renewed, and some indentations faired. She was again dry docked prior to the sea trial for sand blasting and final painting.

After removal of berthing and messing facilities and the customary armament and defense features, work was started on laying out bulkheads and partitions for passengers' and crew's quarters. All public spaces were completely stripped, redecorated and fitted with new furniture and draperies. The boat deck was extended all the way to the side of the ship, and davits were installed to accommodate the required number of life boats. Two new king posts were added aft, and several of the ports which had been closed were restored to their original condition. The existing heating and ventilating systems were modified and extended. All machinery was opened, inspected and the necessary replacements and repairs made.

In addition the vessel is equipped to carry 241 deck passengers, for shorter trips. The crew totals 91 officers and men.

The passengers' lounge, dining salon, smoking room and foyer extend the full width of the vessel. The dining room, which seats 138 at tables for two, four and six persons, is on the second deck. Directly above, on the shelter deck, is the foyer, very attractively furnished.

The ship is divided vertically into four main fire zones by electrically operated fire doors with master control and indicating panel in the wheel house. All bulkheads are insulated to comply with regulations for passenger vessels. A smoke detection and carbon-dioxide extinguishing system, with cabinet in the wheel house, is connected with all cargo spaces, engine room, boiler room, and various lockers.



S. S. TARSUS, flag ship of the Turkish Merchant Marine, steaming away from the Baltimore yard of Bethlehem Steel Company, ready to start on her first trip to the home ports.

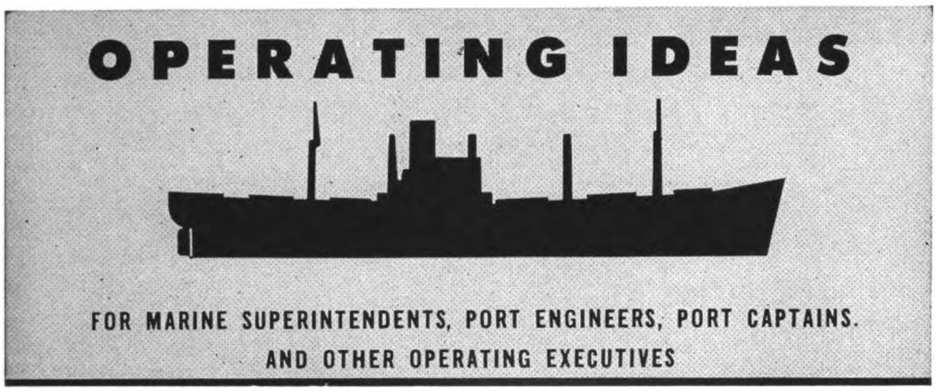
Accommodations for 186 cabin-class passengers are arranged on the promenade deck, the shelter deck, and the second deck. These include eight suites consisting of bedroom, sitting room, and bath, and a number of staterooms with individual baths. The remaining rooms all have lavatories with hot and cold running water. The staterooms are for one, two, or three passenger occupancy and are equipped with regular beds, sofa berths, and pullman berths. Each room has an oscillating wall fan.

Sleeping quarters for 191 Third-Class passengers include six rooms on second deck, accommodating 44 persons, and two large dormitories, one for 51 persons in No. 1 hold, and one for 96 persons in No. 2 hold. These are fitted with pipe berths.

Available cargo space totals 376,046 cu. ft. bale capacity and 29,938 refrigerated space in No. 4 hold. Space for ship's stores total 4528 cu. ft. Bunker capacity is 13,337 bbls., fresh water capacity 984 tons and water ballast 1120 tons. Cargo handling equipment includes fourteen steam winches and sixteen 5 and 10-ton booms on four king posts and two masts. The refrigerated space is served by two elevators.

In addition to the standard navigation equipment the vessel is also fitted with commercial radar.

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FACTORS IN DETERMINING CARGO DEADWEIGHT

By NATHAN FRIEDLAND
Naval Architect
George G. Sharp

A previous article in this series (How to Determine Deadweight Tonnage, January, 1948) described the methods used in finding a ship's deadweight capacity. It was pointed out that although deadweight is a somewhat elusive quantity, it may be determined quite accurately for any given vessel.

Having established the light ship weight by means of a deadweight survey, the cargo deadweight at any desired draft and displacement is determined by subtracting from the displacement the light ship weight and the weights of fuel, water, stores, dunnage, passengers, crew, baggage, etc. Unfortunately, there are frequent discrepancies between the cargo deadweight as determined above and the weight of cargo which a vessel can actually lift. This article, therefore, will discuss the possible sources of such discrepancies and will offer practical suggestions for avoiding them.

The first item to be considered—and the one which accounts for probably the greatest difference between estimated and actually available cargo deadweight—is determining the ship's displacement from the draft readings.

Aside from the possibility of arithmetical error in calculating mean draft from the port and starboard, forward and aft drafts, an erroneous displacement may be derived from any given set of draft readings because of:

1. Unsymmetrical location of forward and aft draft marks.
2. Incorrect vertical location of draft marks.
3. No correction for hog or sag.
4. Inaccurate trim correction.
5. Inaccurate salinity correction.

Forward and Aft Location of Draft Marks

It is frequently necessary for the forward draft marks to be located at a different distance from amidships than the after draft marks. When this is the case, the mean of the end drafts does not give the correct draft at amidships. Since displacement scales are based on drafts at amidships, the displacement read for the mean draft thus determined may easily be in error by as much as 100 to 200 tons. The Liberty ship is a typical example in that the forward draft marks are near the forward perpendicular whereas the after draft marks are about 20 feet forward of the after perpendicular. The following procedure may be used to determine the correct mean draft:

1. Find the distance between draft marks.
2. Find the amount of trim between draft marks.
3. Find the trim per foot of length along the ship by dividing trim between marks by distance between marks.
4. Find the decrease in draft between the forward draft marks and the forward perpendicular by multiplying trim per foot by feet between marks and perpendicular.
5. Find the draft at the forward perpendicular.
6. Find the increase in draft between the after draft marks and the after perpendicular.
7. Find the draft at the after perpendicular.
8. The correct draft at amidships is the mean of the drafts at the perpendiculars.

The above procedure is for trim by the stern; where the vessel is down by the head, the steps are the same except that the draft at the forward perpendicular will be greater than that at the forward marks and the draft at the after perpendicular will be less than that at the after marks. If circumstances warrant making the correction described above, a tabular form may be set up to simplify the calculation.

Vertical Location of Draft Marks

Another possibility for obtaining incorrect displacement from a given set of draft readings arises when the draft marks are not in the correct position vertically. This matter was discussed in the earlier article previously referred to. The base line for draft marks for many recently built vessels was established through the low point of the keel while the vessel was on the building ways. The "built-in" sag, however, changes as the ship becomes waterborne and is subjected to the various stresses induced by loading and the sea. The base line for draft marks soon ceases to have any value for navigation as well as for determining the ship's displacement accurately.

The true drafts above the keel in way of draft marks should be used in determining displacement. The periodic drydocking offers an opportunity for either repainting the draft marks or for determining what correction must be applied to each draft reading to give the actual draft above the line of the keel in way of the marks.

Hog or Sag

The importance of correct vertical location of draft marks is further emphasized when we consider the correction for sag or hog. Suppose that we determine the drafts at the perpendiculars for a certain vessel by the method described above, and find the draft at the forward perpendicular to be 20 ft. and the draft at the same perpendicular to be 24 ft. The draft at amidships should then be 22 ft. Suppose further that the vessel in question has amidships draft marks and that simultaneous port and starboard readings show that the mean draft amidships is actually 22 feet and 4 inches. The vessel therefore has 4 inches of sag and a displacement based on 22 ft. mean draft would not be correct. Actually the hull displaces a volume corresponding to the 22 ft. draft plus the volume of a segment tapering from 4 inches thick at amidships down to zero thickness at the ends. To find the tons displacement of this sag correction we may take the tons per inch immersion at the mean draft and multiply by the number of inches of sag and by a correction factor of 0.8. This correction factor applies to all usual merchant ship hulls and is based on the assumption that the keel profile of the sagged vessel is parabolic. The correction for hog is similar, except that the correction is subtracted rather than added.

As much as 4 inches of sag is not uncommon, and the corresponding sag correction for a C-3 vessel would be about 150 tons. If the draft marks are not properly located vertically it will be impossible to make the right correction for hog or sag.

Incidentally, figures as to actual variation in sag with changes in loading would be extremely valuable. If captains or mates have records of simultaneous end and amidships draft readings for various

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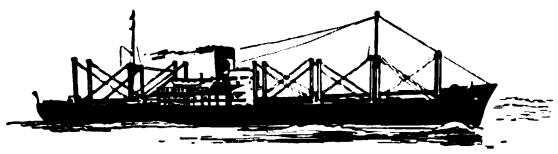
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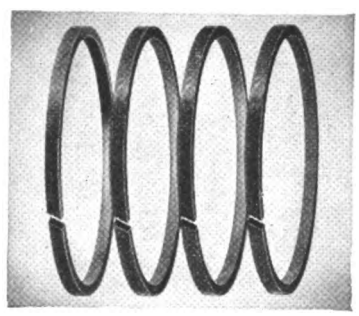
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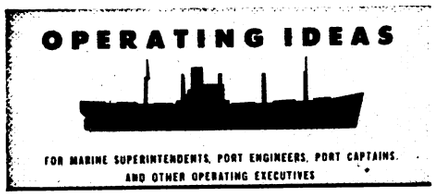
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loadings, the writer would be interested in receiving them.

Trim Correction

Most operating personnel are familiar with the need for correcting displacement for trim. The usual capacity plan does not contain any information to permit this correction to be made and it is necessary to refer to the displacement and other curves (sometimes called the curves of form or hydrostatic curves). This plan contains a curve giving the change in displacement for one foot of trim by the stern. This curve applies only where the amount of trim is small. For a C-3 type vessel, the error in using the curve is about 25 tons at 10 feet trim by the stern. Where a ship operates frequently at large trims, it may be advisable to prepare a series of curves showing the exact trim corrections. At or near full load draft, however, the amount of trim is apt to be small and the approximate correction may be adequate.

Salinity

A final source of error in converting drafts to displacement arises from the possible variation in salinity of the water in which the ship is floating. Hydrometer readings are usually converted into inches of freeboard allowance.

However, where it is desired to determine the actual displacement in brackish water where only a displacement scale for salt water is available, proceed as follows:

1. Read the salt water displacement corresponding to the correct mean draft.
2. Determine the specific gravity of the water in which the ship is floating by taking the average of several hydrometer readings at several depths between the keel and waterline.
3. Determine the correction factor by which the salt water displacement is to be multiplied to give the actual displacement. This is done by multiplying the specific gravity by 0.973.

It should be emphasized that in harbors subject to tidal and seasonal salinity variations, standard water densities should not be relied on and that hydrometer readings should be taken at the time drafts are read.

Cargo Deadweight

After we are reasonably certain of a vessel's displacement by taking into account the factors noted above, we may proceed to make the necessary deductions to arrive at the cargo deadweight.

The first and largest deduction is the light ship weight. Here it is important to note what weights are included as part of the light ship weight. Spares and spare parts are always taken as part of the light ship weight. If there is any confusion as to whether any specific item is a spare (part of light ship) or a store (*not* part of light ship), it is best to mention that item in the definition of light ship weight and to indicate how it is being considered.

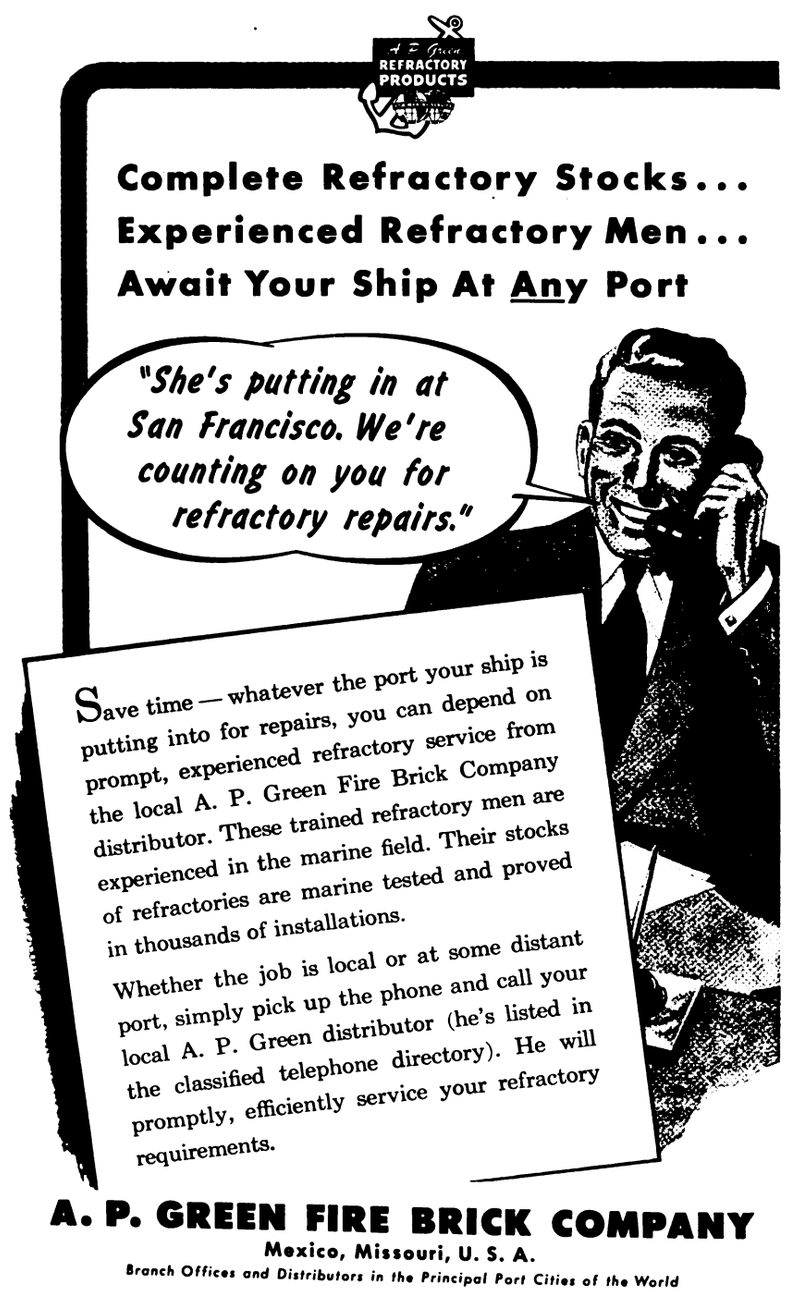
A good general rule about stores is that anything which is consumed or deteriorates during a voyage or series of voyages and requires regular replacement is to be considered as deadweight. Even this rule, however, is not hard and fast, nor is it easy to apply. The important thing is that every weight on board the vessel is to be accounted for in the deadweight bookkeeping once and only once—whether as part of the light ship weight or as deadweight.

Dunnage is so much a part of the ship that operating personnel often forget that it is deadweight and is to be subtracted from displacement in arriving at cargo deadweight. The ordinary freighter may easily accumulate as much as 200 tons of dunnage after several voyages. An accurate estimate of the weight of dunnage on board is therefore essential to any careful calculation for cargo deadweight.

Tank capacities are another source of error in determining cargo deadweight. Aside from the possibility that the tank tables have not kept up with conversions and reconversions, trim or variations in fluid density may affect the reliability of these tables.

Many tank sounding tables are issued with readings for 4 ft. and 8 ft. trim by the stern as well as for even keel, and it is possible to interpolate or extrapolate for other trims with reasonable accuracy. If such tables are not available, the even keel tables may be corrected approximately for trim as follows. First determine the area in square feet of the surface of the liquid at the sounding in question. Then locate the center of area of this surface and determine its fore and

(Continued on Page 58)



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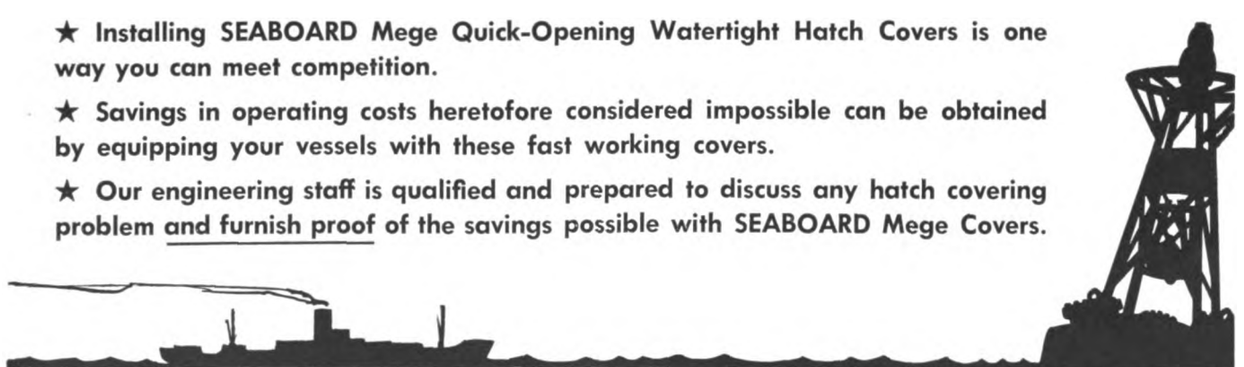
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TELECOMMUNICATIONS:

SHIP RADIO REPLACEMENTS

By E. C. PHILLIPS
Director of Telecommunications
National Federation of
American Shipping

A meeting of the U. S. Liaison Committee of the Provisional Frequency Board of the International Telecommunication Union was held on Friday, July 29th, at which the report of the maritime working group (of the PFB) on high-frequency assignments to coastal telegraph stations was discussed. As outlined below, it is becoming more evident daily that problems relating to the assignment of frequencies to coastal telegraph stations on a world-wide basis are so incapable of satisfactory solution as to *probably require the complete replacement of present high-frequency receiving equipments of all of our vessels within the next two or three years.*

We have explained in previous material that the function of the PFB was to prepare a master plan of international frequency registration within the framework of the frequency space allocated to each service by the International Telecommunication Convention (Atlantic City, 1947). What this means with respect to the marine service is that the working frequencies of all of the coastal telegraph stations of the world (government and non-government) will have to be fitted into the limited frequency bands allocated for this purpose. The problem is to make the frequency assignments in such a manner that the stations will not interfere with one another. The marine plan resulting from two years of continuous international negotiation in Geneva fails of this objective.

An analysis of the draft coastal station frequency assignment plan which has been prepared by the PFB indicates:

(1) The PFB has been faced with the necessity of providing frequency assignments for many more stations than had been anticipated on the basis of previous operations. This means that the number of coastal radio stations throughout the world which will have to share the same frequencies is so great that adequate protective geographical separation cannot be given to them, and

(2) the communications channels have had to be spaced so close together (to get all the stations in) that even when coastal stations are operating on different frequencies (adjacent channels) they will also interfere with one another.

Because of this situation (unless some reduction in requirements can be obtained between now and the next administrative conference of the ITU—probably next Spring), the United States will be faced with either the acceptance of a frequency assignment plan which will require the complete replacement of present shipboard high-frequency receiving equipments, or outright rejection of the international plan with the attendant probability of communications chaos. The selectivity of present ship receiving equipments is insufficient to discriminate between the wanted and unwanted signals of coastal stations under the draft plan, and equipment replacements will be dictated by the necessity of conducting satisfactory communications.

There is so little chance that any remedial measures can be taken that the Government has already proposed to take steps to place a program in motion involving study of the matter by various technical bodies, and giving publicity to the probable necessity of equipment improvements.

The purpose of this letter is to forewarn the industry of this possibility. It was visualized to some extent at the time of the Atlantic City Conference, and the industry was advised then that under the new conditions some transmitter and receiver improvements or replacements were to be expected. However, it was not anticipated that the coastal station assignment problem would be so serious as to render the more modern of our equipments operationally valueless. It can be pointed out, however, that there is no immediate urgency in the situation. High-frequency equipments are not mandatory, and there has been no suggestion for the Government to do other than explain the desirability of and necessity for improved equipments under the probable new arrangements. It is expected that most users will prefer to await developments, and that the purchase of highly selective receiving equipments will be made when dictated by necessity.

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ELECTRONICS: LORAN

AREAS FOR EXPANSION

In answer to a request by the Coast Guard regarding the areas of the world most desirable for expanded loran transmitting service, the Telecommunications Division of the National Federation of American Shipping developed from discussions with its member associations an interesting geographical breakdown.

Based upon statistical data relating to the volume of shipping on essential foreign trade routes of the United States, the following five areas were selected as being those within which the establishment of loran service would most benefit U. S. commercial shipping. It is of interest to note that the areas named were initially developed as representing the best opinions of the industry Telecommunications Committees based on operating experience. The statistical data merely corroborates their judgment in the matter.

The five areas are shown in two groups.

Table 1

MAJOR U. S. FOREIGN TRADE ROUTES
(in order of cargo tonnage carried by U. S. ships—liner services)

Trade Route Number		Designation	Tonnage Carried by U.S. ships (millions of tons)	Total Tonnage U.S. & Foreign (millions of tons)	
(1)	19*	**Gulf—Caribbean**	2.8	3.9	(2)
(2)	4	Atlantic—**Caribbean**	2.3	4.1	(1)
(3)	21*	**Gulf**—U.K., Ireland, Bordeaux/Hamburg Scandinavia and Baltic	1.4	2.6	(4)
(4)	(15)(A)	Atlantic—South and East Coast of Africa, Madagascar	1.24	1.4	(7)
(5)	1	Atlantic—**East Coast of South America**	1.21	2.8	(3)
(6)	18	Atlantic/**Gulf**—India, Persian Gulf, Red Sea	1.1	1.8	(6)
(7)	10	No. Atlantic—Mediterranean, Black Sea, Portugal Spain, Morocco	1.0	2.2	(5)

* These two routes are also the two major routes for U.S. tanker services. Route 21 is also a major route for non-liner services.

Other important routes based on total cargo tonnage (U. S. and foreign) are:

7 and 8 No. Atlantic—Germany, Belgium, Netherlands.....1.9 million tons
(These two routes combined also represent a major route for non-liner traffic)
12 Atlantic—**Far East** (Philippines, China, Japan, Korea, USSR, Fr. Indo China, Siam)....1.4 million tons

Table 2

FIVE WORLD AREAS MOST IMPORTANT TO U. S. FOREIGN TRADE BASED ON CARGO TONNAGE OF U. S. TRADE CARRIED BY LINER SERVICES

1. Caribbean	8.22 million tons
2. Panama Canal*	7.86 million tons
3. North Europe	6.26 million tons
4. East Coast of South America	4.23 million tons
5. Far East	3.30 million tons

* This figure represents the cargo tonnage of liner services using the Canal, 4.36 million tons, and the Federation's estimate of 3.5 millions tons for intercoastal services.

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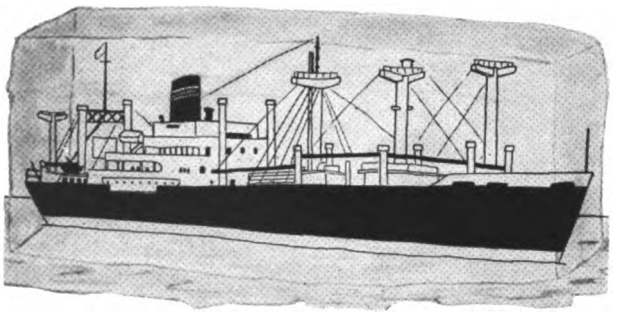
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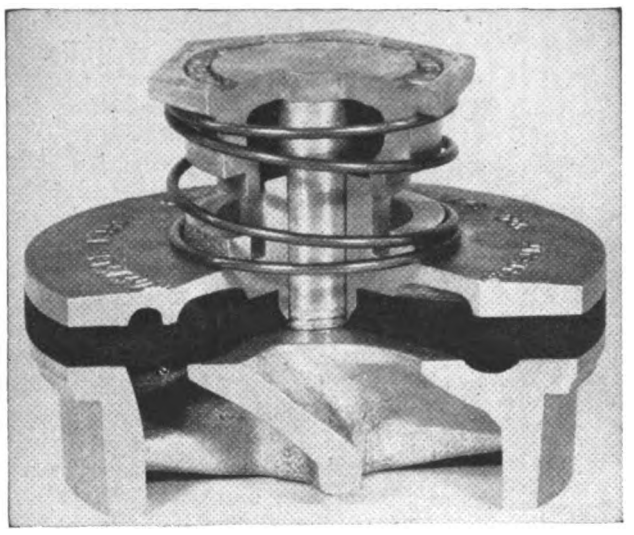
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Electronics: Loran Areas for Expansion

(Continued from Page 56)

From the commercial standpoint, group one would rate first priority. The order of the areas shown within the two groups are not intended to indicate priority. For instance, the three areas in Group 1 may be considered as having almost equal commercial priority, but there may well be non-commercial reasons which would grant the Panama Canal area a priority far superior to the others.

Group 1

1. Gulf of Mexico
2. Caribbean
3. East and West approaches to the Panama Canal

Group 2

4. East Coast of South America
5. Far East

The two tables included have supported this determination. Table 1 shows the major U. S. foreign trade routes listed in order of the cargo tonnage carried by U. S. liner services. Only those routes are shown which involve over a million tons of cargo carried by U. S. ships. Table 2 shows the five world areas most important to U. S. foreign trade based upon the cargo tonnage of U. S. trade carried by liner services. These figures were arrived at by combining the data of the several trade routes serving each area. It is noted that, except for the Northern European area (which is not being considered for expansion), and the Gulf area which is domestic, this table is identical with the areas nominated for loran priority above. The figures shown in both tables are for the year 1948.

In addition, it is mentioned that although the Northwest Atlantic and East Coast of North America areas are not considered for extension, these areas could stand improvement.

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You Never Hear About Accidents that Miss

"Radar doesn't run the ship. It gathers information about approaching vessels and obstructions to navigation, but it is up to human beings to evaluate and use that information."

That answer was given by Thomas P. Wynkoop, president of Radiomarine Corporation of America, while on a Cleveland inspection trip, in an interview recently reported in the "Ship & Shore" column by Julian Griffin of the CLEVELAND PRESS, when asked why some of the major collisions in the past two years involved ships equipped with radar.

"You hear about the collisions," he continued, "but you never hear about the collisions that were avoided. Statistics show that the number of collisions is decreasing.

"Another thing, you never heard of a case in which radar was the cause of an accident."

Wynkoop insists that radar is a piece of equipment that is justified from an economic point of view.

"The collision angle is spectacular," he explained, "but fleet owners save the cost of radar by expediting the movement of ships. Protection against collision is just an added advantage—for free."

Wynkoop is not pessimistic about general business conditions.

"Business is not as good as we'd like to see it—and never is," he quipped. "But we are far from discouraged. Otherwise we would not continue our large expenditures for research and experiment. Like every other readjustment, when it is made, I believe the country's indices will go to new highs."

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OPERATING IDEAS



FOR MARINE SUPERINTENDENTS, CHIEF ENGINEERS, PORT CAPTAINS, AND OTHER OPERATING EXECUTIVES

(Continued from Page 54)

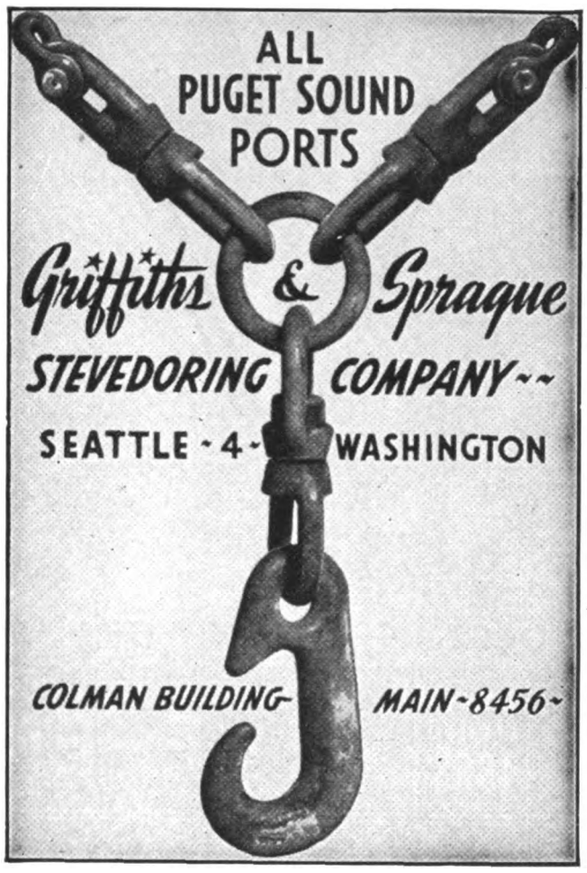
aft distance in feet from the sounding tube. Multiplying the area by the distance and dividing the result by the length of the ship in feet will give the correction to even keel capacity in cubic feet for every foot of trim. For trim by the stern, the correction is to be added if the sounding tube is forward of the center of liquid surface and subtracted if the sounding tube is aft of the center of liquid surface. Subtract instead of add and vice versa, if the vessel is down by the head. Since this correction is only approximate rough estimates of area and center are satisfactory.

Most tank tables give tons weight of fuel oil for any given sounding. The weights are based on a standard density which may easily be 10% away from the actual density of the oil in the tank. The best procedure is to read the number of cubic feet, gallons, or barrels of oil from the table and then convert to tons by use of the proper density. Density of the oil at a standard temperature is usually given in the invoice furnished by the seller. To convert oil density from standard temperature to the actual oil temperature, use the tables furnished by most oil companies. These tables also give conversions from specific gravity or API degrees to cubic feet, gallons, or barrels per ton.

It is hoped that the above discussion will not only serve as a check list for trouble shooters seeking to ferret out lost deadweight, but will also encourage tighter methods of deadweight control and result in better utilization of a vessel's earning capacity.



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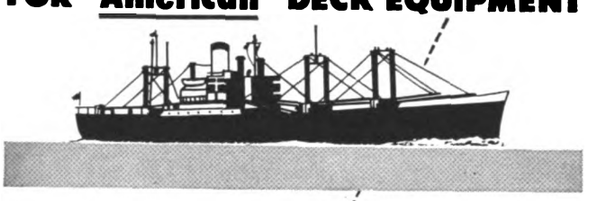
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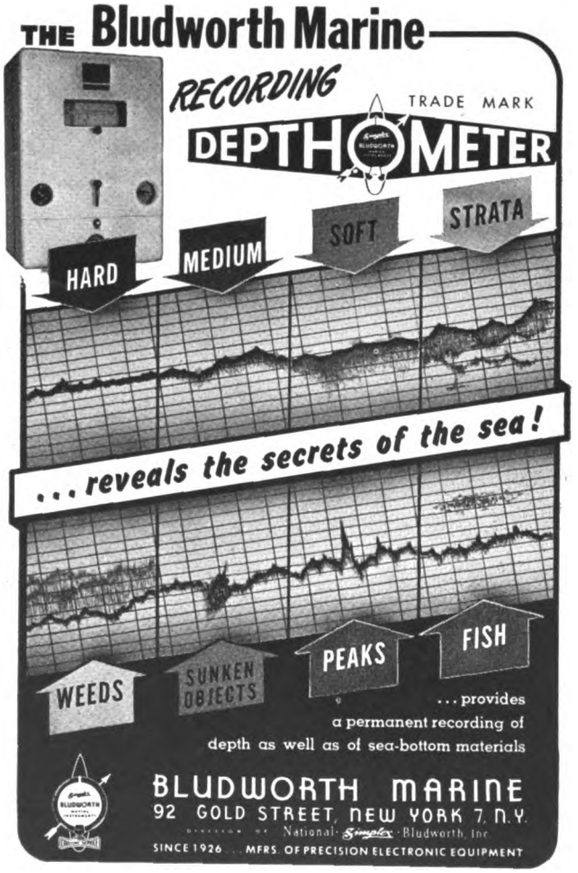
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THE SOCIETY OF PORT ENGI

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Gamlen Talks Refractories To Seattle Port Engineers

Guest speaker at the July meeting of the Society of Port Engineers of Puget Sound was Harry Gamlen, president, Gamlen Chemical Company. Q. A. Herwig, president, Marine Service, Inc., Seattle, Gamlen distributors in the area, introduced the speaker.

Speaking from his background of research in fuel and combustion for the past quarter century Gamlen themed his discussion primarily to the subject of refractories. He traced the history of refractories and paid high tribute to the advancements made by present day refractory manufacturers.

Indicating that the bulk of composition of most refractories is silicon dioxide and aluminum oxide he pointed out that the product is subject to four destructive forces:

1. The iron content of the brick.
2. Sulphur absorption.
3. The catalytic action of carbon dioxide.
4. Unequal expansion.

Noting that normal fusion temperature of the material is about 3500 degrees F, he presented for demonstration samples of both high silica and alumina brick. Both samples had been heated to a temperature of 2400 degrees and held at that temperature in contact with a small piece of iron for a period of two hours. Evidence was that a small piece of iron had caused considerable damage.

Sulphur, he explained, is normally present in fuel oil and coal and liberated through the process of combustion to result in lowering temperature considerably. He said the sulphur acts as a flux causing the refractories to fuse and melt into slag at temperatures far below their normal fusion point.

He pointed out that discovery of Mullite on the west coast of Scotland developed new ideas in the efficacy of coatings and bonding materials and resulted in extensive laboratory research and experiments to produce cements and furnace coatings having characteristics equivalent to Mullite, including extreme hardness in service and a softening point close to fusion point at a temperature above 3000 degrees F.

Firemaster, a Gamlen Company product, was used for demonstration. Offered in powder form, the material is mixed with water to the consistency of cream and applied to the bricks with a paint brush or spray gun. Samples of standard refractories, coated with Firemaster, which had been fired and subjected to the iron and other tests were passed among the audience as evidence of iron and sulphur resistant qualities. Serviceability and extreme hardness of the material was tested on an emery wheel brought to the meeting for the purpose. The temperature of the brick soon reached a degree which made the sample too hot to handle with the test serving to merely polish and prove abrasive resistance. With this test in evidence Gamlen asserted: "Firemaster coating is indestructible by abrasion or temperatures below 3500 degrees for even an ox-acetylene torch fails to faze the product."



PUGET SOUND PORT ENGINEERS JULY MEETING . . . Top row, left to right: THOMAS McGRILLIES, marine superintendent, States Marine Company; HARRY GAMLEN, president, Gamlen Chemical Company; R. C. STORRS, port engineer, American Mail Line, vice-president, Puget Sound Society of Port Engineers.



SOCIETY OF PORT ENGINEERS, Columbia River Area 2nd Annual Picnic . . . At the barbecue pit: Left to Right: DAVID SHAW, Shaw Brothers and Associates; KENNETH WEBB, U. S. Salvage Association; STANLEY WATT, Matson Line; HARVEY MARTELL, The Texas Company; JAMES SAVISKI, U. S. Maritime Commission; SAM LEONG, Marine Electric Company.

The extensive work of Gamlen and his three sons, Curtis, Allen and James, on fuel oil emulsions and sludge, in addition to refractories, and their development of Gamlenite and Gamlenol, was reviewed during the discussion.

At a later session in July the Puget Sound Society assembled with guests and friends for their third annual picnic. With Marine Service, Inc., assuming responsibility for ordering and delivering of all food, soft drinks and beer; and supply and ship repair firms cooperating with offerings of prizes in number gate, racing and other competitive awards, the event has become recognized as one of Seattle's notable waterfront gatherings.

Portland Port Engineers Hold Second Annual Picnic

Marelco Rancho, the country estate of the Trout family, owners of Marine Electric Company, Portland, was the scene of the second annual picnic of the Society of Port Engineers, Columbia River area.

A bright clear sky, the picturesque setting, hospitable hosts, Sam Leong at the barbecue pit, and an assembly of 350 congenial Portland "waterfronters" all combined to occasion universal comment that the picnic was a success and for some to say this picnic was the finest ever attended.

Early planning of the committee, Kenneth Webb, Harvey Martell, James Saviski, Matt Trout, David Shaw, and Stanley Watt; cash and prize contributions by friends of the Society, and supplying of barbecued beef, pork and ham and the picnic by Marine Electric Company, served as the motive power to achieve the success.

Crane Co. Film to Open SF Engineers Fall Season

Marshall T. J. Garlinger, chairman of the program and educational committee of The Society of Port Engineers, San Francisco, announces the Crane Co. will show its picture, "Life Lines of Industry," at the organization's meeting September 7.

This picture, taken at the big Crane valve plant in Chicago, has been shown at meetings of the port engineers in Los Angeles, Portland and Seattle and has been very favorably received.

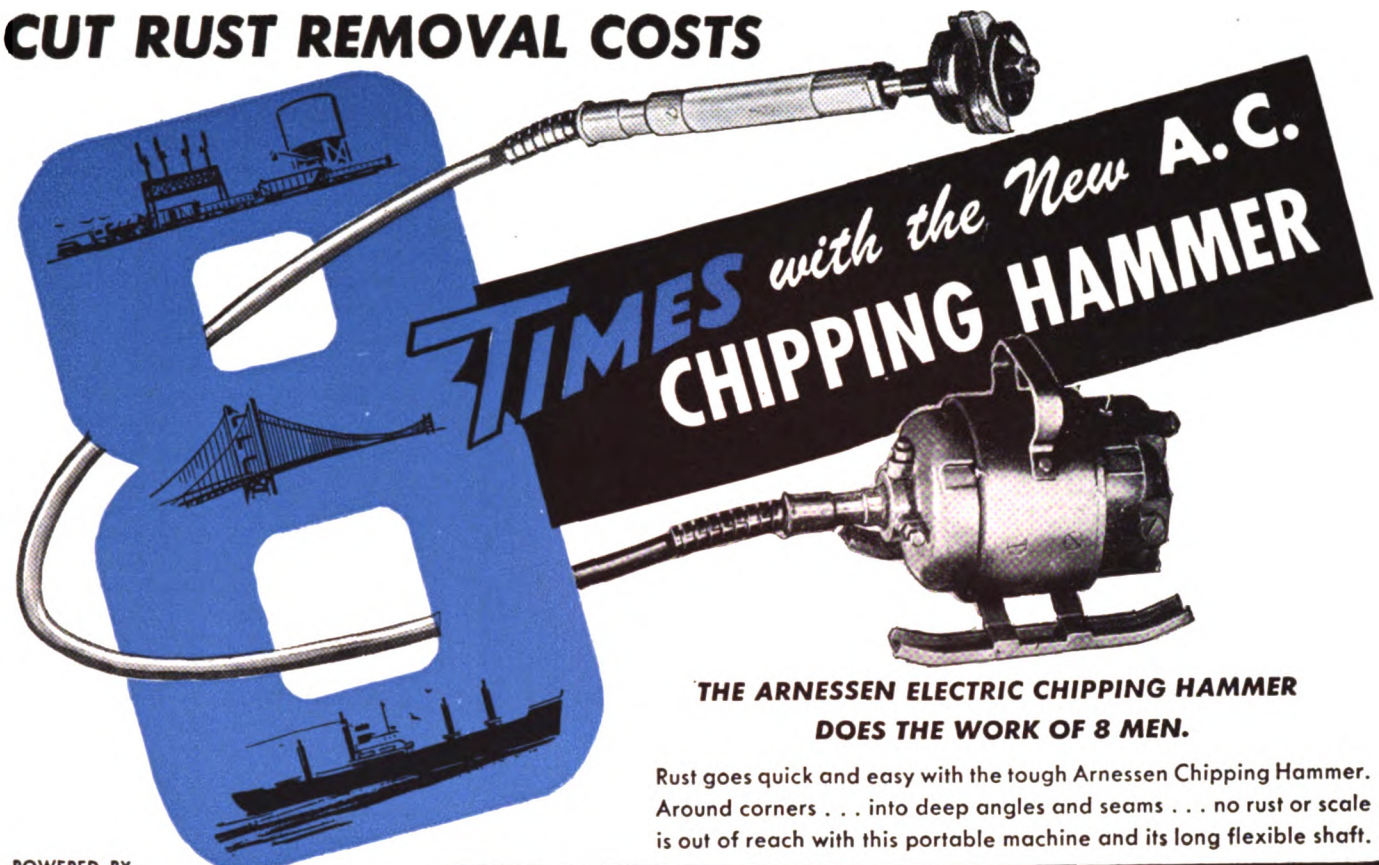
Ralph Kreiss, Crane marine representative, and W. P. Toepke, Crane sales engineer, will present the picture and conduct a question-and-answer session. J. W. Burress, manager of the Crane San Francisco office, arranged for the showing.

Anchor Equipment Co. has arranged an illustrated talk for the September meeting by S. J. Katz of the Koppers Co. tar products division on Bitumastic anti-corrosive industrial coatings.

For the November meeting, Mr. Garlinger has arranged for a talk by Walter B. Hill, marine manager for C. C. Moore & Co., Engineers, Pacific Coast representatives of The Babcock & Wilcox Co., on steam atomization of fuel in the boiler furnaces.

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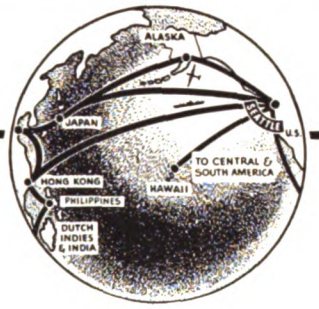


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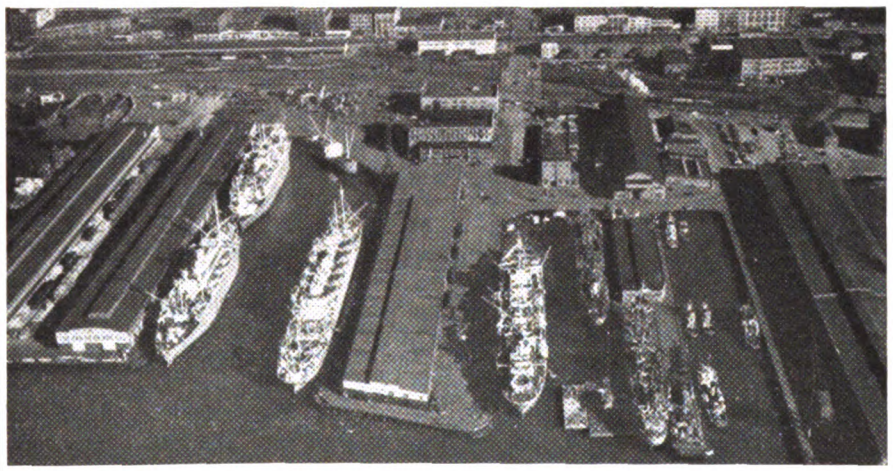
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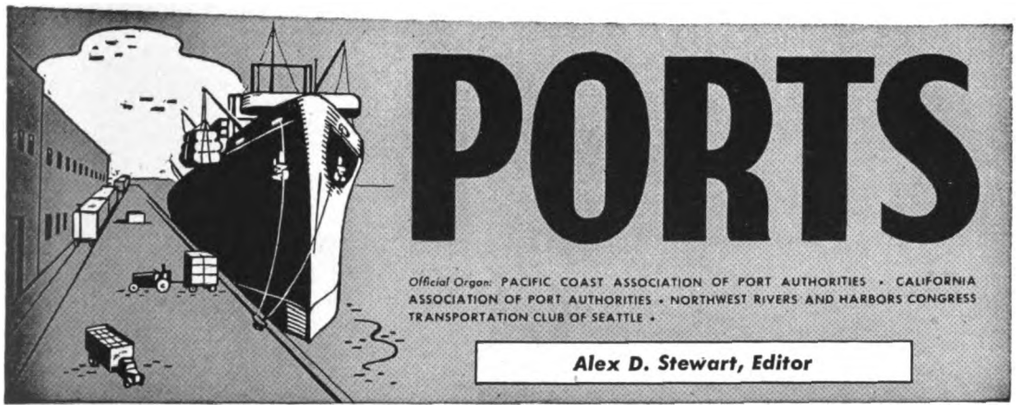
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Alex D. Stewart, Editor

SEATTLE HOST CITY TO PORT AUTHORITIES

Insurance, Foreign Trade Zones, Western Transportation Conference, Terminal Operations Discussed at Three-Day Session

With a registration totaling 191 delegates and guests, port authorities of the Pacific, from San Diego to Vancouver, British Columbia, assembled at Seattle in July for the 36th annual convention of the Pacific Coast Association of Port Authorities.

Panel sessions included discussions on insurance, foreign trade zones, the Western Transportation Conference and terminal charges. Lobby, luncheon and dinner conversations developed numerous interchanges of ideas on engineering, operation methods, small boat havens, airport development and other problems linked with public and private terminal operations.

The insurance panel was led by Louis LeBow of Seattle who ably answered many questions directly related to terminal management.

Robert H. Wylie, manager, Board of State Harbor Commissioners, San Francisco, charmanned the foreign trade zone panel. He detailed that 369 zone lots with value of more than $3,000,000 from 34 countries had been handled in the San Francisco Foreign Trade Zone since its inception. He advised cooperative customs officials had permitted entry into the zone via shuttle service by trucks and rail cars from vessels which had not berthed at the pier, in addition to movements direct from ships. Other speakers on the panel included Sterling St. John, vice president, New York Foreign Trade Zone Operators, Inc.; James O'Leary, operating manager for West Coast Terminals, operators of Foreign Trade Zone No. 3, San Francisco; and Paul Ahearn, deputy collector of customs, San Francisco.

Rail lines, steamship operators, freight forwarders, bankers, marine insurance firms, truck groups, and port and terminal operators were reported as supporters of the Western Transportation Conference. The panel was chairmanned by Hiram V. Walker, traffic manager, Pacific Transport Lines, Inc., San Francisco. Speakers included Captain D. J. McGarity, general manager, Commission of Public Docks, Portland; F. W. Watkins, export and import agent, The Milwaukee Railroad; and H. T. Krull, traffic manager, American Mail Line, Seattle. Krull stressed the importance of Transcontinental Freight Bureau hearing at Chicago in August having bearing on rail and water carriers each assuming their fair share of terminal charges on movements where those charges are included in the over-all rate, and specifically on movements beyond the 170th meridian.

Means to Increase Imports Recommended

George S. Bell, acting director, Office of International Trade, Department of Commerce, was the guest speaker at two public sessions. On both occasions he advocated revival of multi-lateral trade. Stating importation is a definite factor in United States economy and the biggest problem in international trade, he commented that the job is one of stimulating, increasing and expanding the nation's imports. He said this could be done by greater effort in sales to the hinterland, through hard work in rate structures, and by means of educational and promotional programs directed to the public and to Congress.

George W. Osgood, manager and chief engineer, Port of Tacoma, organized the terminal operations panel by inviting comment from a stevedore, a ship operator, a labor union representative, and a representative of both public and private terminal operators to comment on the various classes of operations. For comparison he broke these down into six categories.

(1) Straight outright leases.

(2) Preferential Assignments.

(3) All operations by terminal, including handling and car work.

(4) Car work by terminal and handling by stevedore or other outside terminal organization.

(5) Stevedore working from place of rest, car work by terminals.

(6) Car work by outside contractors and balance of wharf operation by stevedore.

Need for All Existing Terminals Minimized

Winston J. Jones, district manager, States Steamship Company, Seattle, quoted from a well prepared paper to supply the viewpoint of a ship operator. Stating his remarks were limited principally to the Pacific Northwest primarily because of the acute situation currently prevailing in the area he drew attention to the declining volume of tonnage in coastwise and intercoastal trade, discussed pallet operations, and touched upon varying traffic patterns as determined by hinterland products and trade routes. "Because of the reduced volume," he said: "it is reasonable to assume that the industry cannot support as many terminals as before the war, further that all terminals are not organized to the same degree of efficiency." He reviewed one phase of handling costs and charges with the words: "Whoever performs both the car unloading and handling can synchronize the two operations where the pallet system is used. Perhaps we can use one of the big arguments used in favor of the stevedore doing the handling. Proponents of this argue that but one profit is involved, while if the dock does the handling two profits are included.

"By the same token, if the terminal performs both the car unloading and the handling, they are performed on a smaller margin, and in some cases the profit on one operation offsets the loss on the other. By transferring part of the terminal work to the stevedore, the fixed terminal overhead would not be reduced, so it must be allocated against that much less revenue and would probably be reflected in the service charge.

"The argument that there is only one profit when work is done by the stevedore is somewhat fallacious in that the profit is predicated on a percentage of the payroll, whoever handles it.

"A dock operator must deliver the cargo from any place on his dock, however it is believed the stevedore would be asking for extras for long hauls and crowded conditions or because the cargo was piled too high."

Summarizing he observed:

(1) The most satisfactory and desirable arrangement is to have the stevedore perform the entire operation, i.e.; car work, handling and ship work.

(2) That all dock operations should be performed by the same operator, including car work and handling to ship's tackle.

(3) That to split the car work and handling leads to confusion and higher costs.

Stevedore Tariff Advocated

M. J. Weber, vice president and operating manager, Tait Stevedoring Company, Seattle, drew from his experience in cargo

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handling operations since 1920 to review varying conditions and to comment: "Stevedoring and cargo handling costs absorb as much as 41 per cent of total operating costs and represent the number one expense in steamship operations.

He continued: "In view of its importance, stevedoring and terminal handling operations most certainly deserve to be administered by top management under factual controls." He recorded in his judgment the stevedore should be content with a ship's tackle operation and that the terminal operator is entitled to all the remuneration he can derive from cargo moving over his terminal for the maintenance of his property, shop, gear, equipment and labor costs, and enlarged on the idea by stating: "I believe that if a terminal operator is going to do the car work he should also follow through and do the handling to and from ship's tackle."

Returning to the theme of factual controls and large portion of overall costs represented by stevedoring he commented steamship companies have tariffs; terminals operators have tariffs; and queried: "Why shouldn't stevedoring companies have tariffs?" He reflected that factual and equitable stevedoring tariffs realistically setting forth standard practices and charges, as well as terminal operators, would supply the uniformity to which shippers and consignees are entitled, encourage fair competition, and stimulate a healthy competitive condition.

Military Operations Questioned

The views of a private operator were expressed by R. L. Albin, general manager, Ames Terminal, Inc., Seattle. He developed that in view of competition from tax free, and sometimes tax subsidized, publicly owned terminals, the privately owned terminal must resort to every means of obtaining revenue including car work, handling, stevedoring to the place of rest in ship's hold, warehousing, packing and crating. He indicated this extension of service is not a difficult problem for the reason 75 per cent of the equipment needed—tackle, gear, boards, lift trucks, etc.—are owned by the terminal.

Departing from the six point questionnaire of the chairman he cautioned that in view of subsidized military installations and operations the question today is not so much who is to perform what work on both public and private terminals but rather the action to be taken to restore private ship operators and non-military piers the normal commercial cargoes currently being handled by military in the name of relief cargoes or otherwise.

Commenting that labor's viewpoint is that working for one employer on one movement is preferred to switching men forth and back from terminal payroll to stevedore payroll with resultant confusion and men's checks usually being short, Robert R. Collins, International vice president and secretary-treasurer, Pacific Coast Area, International Long-

36th ANNUAL MEETING OF THE PACIFIC COAST ASSOCIATION OF PORT AUTHORITIES . . . Top row: NOMINATING COMMITTEE—Clockwise, starting left center: CARL M. SMITH, San Francisco; A. H. ABEL, Oakland, chairman; E. E. FERRARI, Stockton; K. K. REID, New Westminster; CAPTAIN D. J. McGARITY, Portland; HARVEY HART, Longview; W. R. MARTIN, Long Beach; W. J. MURPHY, Aberdeen. ADMIRAL GORDON ROWE, Seattle.

Second row: RESOLUTIONS COMMITTEE—Clockwise beginning at left: ARTHUR W. NORDSTROM, Los Angeles; KENNETH N. CHANTRY, Los Angeles; GEORGE W. OSGOOD, Tacoma, chairman; F. G. PENDER, Vancouver, Washington; T. C. BROOKE, Vancouver, British Columbia. Newly elected vice president MARTELL WILSON, Stockton. A. E. McMASTER, port manager, Vancouver, B. C. Association secretary COLONEL WARREN D. LAMPORT, Seattle.

Third row: HONORARY MEMBERSHIP COMMITTEE—Clockwise starting at left: ROBERT H. WYLIE, San Francisco; Chairman WALTER S. SPICER, Newport Harbor, California; E. H. SAVAGE, Seattle; H. W. DAVIES, Port Angeles; J. B. CHADWICK, Los Angeles; F. W. G. SARGANT, Vancouver, British Columbia. H. W. DAVIES.

Bottom row: BY LAWS & CONSTITUTION COMMITTEE—C. S. SAMPSON, Los Angeles; M. W. DAUBNEY, Long Beach, California; CAPTAIN HOMER T. SHAVER, Portland; CLAIRE V. GOODWIN, Oakland; JOHN F. L. BATE, San Diego. R. R. SHOEMAKER, Long Beach.



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shoremen's Association, A.F.L. said: "I had hoped to hear in this discussion not how to operate but what is being done to develop cargoes on the Pacific Coast in order that terminals can operate."

Profitable Defined in Terms of Public Ports

Interpreting the public owned terminal viewpoint, Harvey B. Hart, manager, Port of Longview, Washington, said: "Just what is the best way to deliver the most profitable return to John Q. Taxpayer is our problem and right here we might as well attempt to define what profitable means. Naturally being the people we are, we can expect profitable to mean financial gain, but that is not all. Webster points out that it also denotes useful and helpful. These things together, I feel combine to form the commandments of public terminal operation.

"I can only speak for myself and the method which seems to me to offer the best chances of successful operation. The better is complete integration of all terminal operations. Handling, car work, checking, sorting, marking, weighing, sampling and all the various services are each performed with a combination of labor, equipment and superintendence. If but one profit is taken from all services it seems to me a more efficient operation has been accomplished, and a lower cost effected."

He continued such action promoted efficiency, offered a better chance of control or reasonable rates, afforded opportunity for full usefullness of trained crews, and made equipment as well as other facilities available to all to thus protect unnecessary duplication.

"When this method is not available," said Hart, "I believe that the public terminal should retreat to the position of landlord and lease or assign its facilities and space. This will allow the lessor or assignee to take over and operate as I have outlined. However, let me suggest that in this case the rental or wharfage should clearly cover the amortization of the cost, provide for depreciation and maintenance and always yield a reasonable profit in addition."

He concluded: "Profitable auxiliary operations should not be allowed to support unprofitable operations or unfair trade practices will prevail."

Officers and Directors Elected

The delegates recommended to the board of directors that the 1950 session be held at Los Angeles and elected for president C. S. Sampson*, chairman of the Board of Harbor Commissioners, Los Angeles. Martell Wilson, chairman of the Port of Stockton Commission, was elected first vice-president; Captain Homer T. Shaver, Commission of Public Docks, Portland, second vice-president. H. G. Rouse, secretary, Board of Harbor Comsioners, Los Angeles, was elected secretary treasurer.

Elected to the board of directors were: John F. L. Bate, San Diego; W. S. Spicer, Newport Harbor, Calif.; A. K. Maddy, Long Beach; K. N. Chantry, Los Angeles; Brigadier General Robert H. Wylie, San Francisco; Claire V. Goodwin, Oakland; E. E. Ferrari, Stockton; W. L. Williams, Portland; W. F. McGregor, Astoria; Lyle Hickok, The Dalles; J. P. Breckel, Vancouver, Washington; O. H. Umbaugh, Longview; Lester Owens, Willapa Harbor; Frank H. Lamb, Grays Harbor; E. Gribble, Olympia; G. W. Osgood, Tacoma; E. H. Savage, Seattle; E. J. Secor, Everett; H. W. Davies, Port Angeles; F. W. G. Sargant, Vancouver, British Columbia; K. K. Reid, New Westminster, British Columbia; T. C. Brooks, North Fraser, British Columbia.

* EDITOR'S NOTE: Mr. Sampson died of a heart attack on his return to Los Angeles after the convention.

LA Foreign Trade Zone Scheduled to Open Sept. 1st

Assurance that Los Angeles Harbor's Foreign Trade Zone would be opened for business September 1st was given recently by the city council's adoption of an ordinance setting the tariffs and awarding contracts for work on the site.

Ets-Hokin & Galvan, California marine electricians, were given the $11,268.00 contract for the floodlighting and are installing twenty-two 15,000-watt lights.

T. G. Maddox, traffic manager of the port, says the new Foreign Trade Zone tariff approximates the cost of storage and handling as charged at the San Francisco zone, but many charges are lower than at the New Orleans zone.

The dedication ceremonies September 1 will be for both the FTZ and a new $1,500,000 municipal warehouse.

Long Beach Appoints Two New Commissioners

Two new members have been appointed to the Long Beach Board of Harbor Commissioners.

Emmet M. Sullivan, vice chairman of the Civil Service Board of the City of Long Beach, and Raymond D. Elliott, president of Oil Field Service Company, were named to the commission, succeeding George Rochester and Frank J. Parr, whose terms expired July 4, 1949. The appointments were made by City Manager Samuel E. Vickers and confirmed by the Long Beach City Council at its meeting of July 19th.

The two appointments are for six year terms, expiring in 1955. The remaining members of the commission are W. R. Martin, whose term expires in 1951, and M. W. Daubney and M. S. Walker, whose terms expire in 1953.

Foreign Trade Zone Grant Delivered at Seattle

The grant to establish, operate and maintain a foreign-trade zone at Seattle was officially presented to the Port of Seattle on July 18 as an opening ceremony in connection with foreign-trade zone clinic held in the city July 18 to 20.

First of its kind to be held in the history of American commerce, the three-day clinic featured discussions and questions on practical ways and means of making extended use of a foreign trade zone. Sterling St. John, Jr., New York Foreign Trade Zone Operators, Inc., acted as director.



J. D. EARLEY, right, president, Port of Seattle Commission, receives Foreign Trade Zone grant for Seattle from PHILIP M. CRAWFORD, Regional Director at Seattle, Department of Commerce, acting on behalf of Secretary of Commerce Sawyer. Seattle's Foreign Trade Zone is expected to be opened for operation in early September.

A total registration included representation from California, Oregon, British Columbia, Alaska, Idaho, mid-west cities as well as from many cities and towns of Washington.

Port of Seattle Personnel Changes

Colonel Warren D. Lamport, general manager, Port of Seattle, has announced the appointment of Joseph J. Usher as manager of the port's traffic department, and appointment of Everett P. Clark as manager of the rentals and leases department.

Usher has been with the port since 1946. Earlier he served in the Navy in the port director's office and as cargo officer in the Orient. Previous experience includes 12 years with the Puget Sound Navigation Company, and service with the old Pacific Steamship Company and the Admiral-Oriental Line.

Clark first joined the port staff in 1935, following service with the Pacific Steamship Company and the Alaska Steamship Company.

New Orleans Names New Commissioner

Leon Irwin, Jr., New Orleans insurance executive, was recently appointed as a member of the Board of Commissioners of the Port of New Orleans by Governor Earl K. Long.

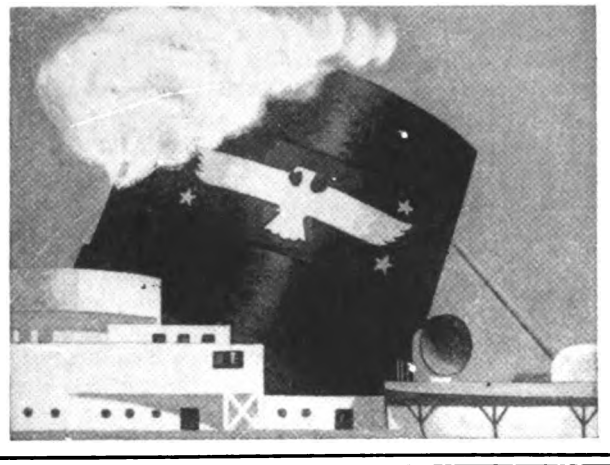
Irwin was named to succeed H. Grady Meador, whose term on the Board has expired. Meador recently moved to Pittsburgh, Pennsylvania, where he is vice president of the Gulf Oil Corporation and Gulf Refining Company.

September Meeting Set for N. W. Rivers & Harbors Congress

The 1949 meeting of the Northwest Rivers and Harbors Congress is set for September 30 and 31 and October 1, at Vancouver, Washington. J. H. Wheeler, president of the Vancouver port commission, is president of the Congress; F. G. Pender, port manager at Vancouver, is secretary.

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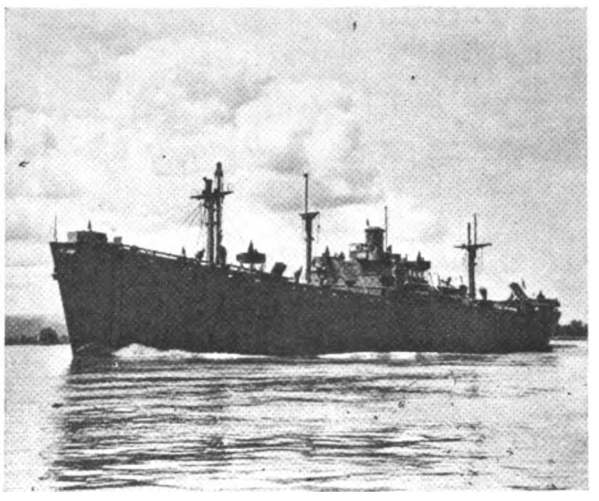
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EQUIPMENTALK

Turbine Oil of "Perpetual Duration" Shell Turbo Oil—37

Although physicists have yet to prove the possibility of "perpetual motion," Shell Oil Company's chemists have produced what they believe to be a living sister to the myth—namely, a turbine oil of "perpetual duration." Or at least of so durable a quality as to emerge from some 253,000 ocean-going miles, logged over a three-year span, in what was pronounced perfect condition, reported by the company.

It is Shell's famous Turbo Oil 37, a rust-inhibited turbine oil, for 36 months a tireless laborer in the two cross compound steam turbines powering the American President Line's recently owned ss GENERAL MEIGS.

Engineers of the steamship company's trans-Pacific liner gave out the verdict on the eve of the MEIGS' termination of service. However, the honor done to Turbo Oil 37 was nothing new to this pioneer corrosion-resistant.

During the early part of the War, United States warships were faced with two deadly enemies—the Nazi U-boats from without and from within, rust. The attack from the latter was centered chiefly on the lubrication systems of the main propulsion turbines of certain combat vessels, particularly on a number of destroyers engaged in North Atlantic convoy duty.

Shell had been working on this problem for some time, already producing highly stable rust-inhibited turbine oils for stationary units, and was consequently given the job of assisting the Navy. The company reports that in a short time they came up with Shell Turbo Oil 37, which successfully passed the armed forces' rigid requirements.

WACO ALUMINUM ACCOMMODATION LADDER designed and fabricated for Sun Oil Company by Washington Aluminum Co. of Baltimore. Farrell Line's new Ships, AFRICAN ENTERPRISE and AFRICAN ENDEAVOR, are both equipped with Waco aluminum gangways and accommodation ladders.



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Warren Compacunit Pumps Now Cradle Mounted

Warren Steam Pump Company, Inc., Warren, Massachusetts, manufacturers of a complete line of Centrifugal and Reciprocating Pumps, announce the addition of Cradle Mounted Compacunits. Unlike the regular close coupled Compacunits, these new items may be V-belt, Turbine or Motor drive. Sizes, 1″, 1½″, 2″, 3″. Capacities 5 to 450 GPM. Heads 15 to 500. Materials, standard, all iron, all bronze or special metals to meet unusual requirements. Early deliveries on most sizes and standard materials.

The company states these Cradle Mounted units have the same quality features which in the original Compacunit line established new standards of excellence for close coupled pumps. They report these features include:

Anti-swirl baffle—prevents air binding.

Impeller nut—locks impeller securely.

Semi-labyrinth case rings—maintain efficiency and protect casing.

Smooth flow keyed impeller—high efficiency and low power.

Renewable, protective shaft sleeve—triple protection of shaft.

Extra deep stuffing box—lower maintenance, longer packing life.

Pump supporting frame—assures alignment and resists normal pipe strains.

Protective Slinger—keeps water from reaching motor.

Heavy duty angular contract thrust bearing—assures trouble-free, long life.

Tested performance insures efficiency and full capacity.

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Enterprise Engine Issues New Marine Bulletin

Enterprise Engine & Foundry Co. announces publication of a new 16-page Bulletin in color, featuring their complete line of marine diesel engines. This bulletin, fully illustrated with photographs, charts and cutaways, describes Enterprise normally aspirated and turbo charged diesels, component parts, ratings and applications.

Copies of Bulletin No. 174 are available by writing Enterprise Engine & Foundry Co., 618 Florida St., San Francisco 10, Calif., or through any Enterprise branch office.

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"Henco" Anchors Made On Pacific Coast

Anchors of all sizes for commercial vessels will continue to be manufactured on the West Coast through an arrangement recently concluded by the C. J. Hendry Co. When the foundry, which for years cast the famous "Henco" line of anchors, discontinued its West Coast operations, the C. J. Hendry Co. arranged for a continuing supply of these anchors by moving all patterns to a new foundry.

Smaller anchors for fishing and other light craft will continue to be available as well as a wide range of heavier anchors weighing from 2 to 10 tons. These larger anchors are tested and certified.

The company reports "Henco" anchors are the only anchors made in the Western United States in a complete range of large sizes. For ships in Pacific Coast waters this means an obvious economy and speed of delivery, states the company.

C. J. Hendry Co. is also West Coast distributor for nationally known Naco chain and equipment. They report a complete stock is warehoused so delivery can be made without delay.

This special Henco anchor cast for use in the buildings of the San Francisco Bay Bridges illustrates the size anchors that can be cast on the West Coast by the C. J. Hendry Co.



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LESLIE EXECUTIVE VISITS PACIFIC COAST—RUSSELL W. BOETTIGER, (center) sales manager of The Leslie Co., Lyndhurst, N. J., conferred with his firm's West Coast sales representatives in July. Here he is shown with the staff of Cordes Brothers, San Francisco. Left to right: LOWELL JETT, ART LEWIS, MR. BOETTIGER, RALPH, MURRAY and JOHN CORDES. In Southern California Mr. Boettiger visited with the J. M. Costello Supply Co. and in Seattle and Portland with the John H. Marvin Co.

Socony-Vacuum Installs New Wharf at Albany, N. Y.

A new wharf for unloading tankers is being installed by the Socony-Vacuum Oil Company, Inc., at its bulk terminal on the Hudson River at Albany and is scheduled for completion about the middle of September.

The wharf replaces two breasting barges used previously. It will be equipped with a hose frame for more efficient unloading of tankers. A walkway supporting pipelines to the company's tank farm will connect the wharf with the shore.

78-1-3M

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W. E. JACOBSEN, newly-appointed Assistant Manager of General Electric's Federal and Marine Engineering Division. He will assist R. A. Beekman, Manager of the Division, in all application work of the division.

Babcock & Wilcox and Foster Wheeler Boilers on U. S. Lines' Superliner

The new U. S. Lines' superliner and naval auxiliary, designed by Gibbs & Cox and now under construction at the Newport News Shipbuilding & Dry Dock Company, will be equipped with boilers of the Babcock & Wilcox Marine design.

According to the company, this installation will mark the first use of these extremely powerful units in an American passenger vessel. The boilers will be designed by The Babcock & Wilcox Company and half will be built by that company, with the other half being built by the Foster Wheeler Corporation. The units will all have Foster Wheeler Fin-Tube Economizers and Babcock & Wilcox Oil Burners.

Heretofore Babcock & Wilcox has designed and manufactured many boilers for the U. S. Navy. They report that during World War II these boilers were often operated under severe conditions for several hundred thousands of miles without requiring outage time for inspection and maintenance and the lessons learned and experience gained from these installations will be embodied in the large units for this new U. S. Lines vessel. These boilers are characterized by their reliability and their minimum weight and space requirements.

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Jaxon Engineering Specialties, marine manufacturers representatives of 181 Steuart St., San Francisco, announces it is now stocking, selling and servicing Darling Valves, Jones & Laughlin wire rope, Kraissel marine strainers, Jerguson gages and valves and Darcova Packing. Alex Johnston and Charles Jackson head up Jaxon Specialties.

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ANNOUNCEMENT

"Effective September 15, 1949, the Crane Packing Company will no longer represent the FRANKLIN Manufacturing Company as the distributors of DUDLEY Electronic Controls and FRANKLIN Precision Ball Bearing Tube Expanders.

Information on the above equipment will be supplied direct by: FRANKLIN MANUFACTURING COMPANY, 149 South Fourth Street, Philadelphia 6, Pa."

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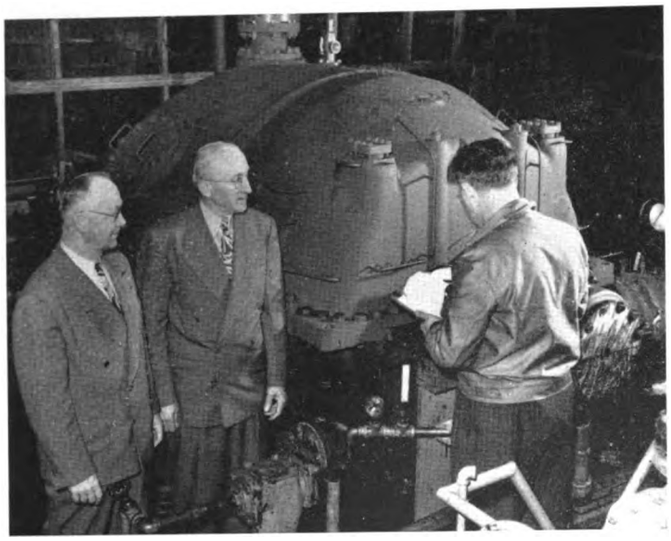
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CALIFORNIA-BUILT TURBINES FOR OHIO-BUILT SHIP—Shown here is a low-pressure turbine being given its "overspeed test" at the Westinghouse plant at Sunnyvale, California before being sent to Lorain, Ohio, for installation at the American Shipbuilding Co. yard there on the new Inland Steel ore carrier WILFRED SYKES. The turbine is part of a modified C-3 type marine propulsion unit.

Watching the test are, left to right, D. W. DAY, American Bureau of Shipping and GEORGE C. FERENZ, United States Coast Guard. With his back to the camera and checking performance is HERBERT BUCKINGHAM, Turbine Production Supervisor at the Sunnyvale plant.

Westinghouse & Combustion Equipment Aboard Ore Carrier

Westinghouse Electric Corporation is furnishing the high pressure and low pressure turbines and Combustion Engineering-Superheater, Inc., is supplying two Combustion Engineering Type V2M marine boilers for the ss WILFRED SYKES, launched June 28th at the Lorain, Ohio, shipyard of the American Shipbuilding Co. This is the largest ore carrier ever built on the Great Lakes.

The geared turbines will develop 7,000 shaft hp and each boiler will have a capacity of 32,000 lbs. of steam per hour, with an overload rating of 48,000 lbs. per hour, making them, according to their builders, the largest boilers in point of capacity yet installed on a cargo vessel in regular Great Lakes service.

In addition to the turbines, Westinghouse is installing the maneuvering valve, the gear, the turbine gear and the coupling. The hp turbine develops 3,850 shp at 5,860 rpm and the lp turbine 3,150 shp at 4,490 rpm. The turbines were built at the Sunnyvale, California, plant of Westinghouse.

Among the features incorporated in the modern combustion boilers are the following:

1. Extended screen tubes, with separate inlet header, to provide protection for water drum without the necessity of refractory protection on the gas side of the drum.
2. Vertical superheater elements, which permit thorough cleaning by conventional soot blowers and provide less opportunity for deposit of products of combustion.
3. Flexible connections to and from superheater headers.

Firing of the boilers is by means of three steam atomizing oil burners designed to burn No. 6 fuel oil. The sides, roof and rear of the furnace are water cooled, with an inclined tube bank. Each boiler has a two-pass horizontal tubular air heater. The front and rear of the boilers are double cased, with the wind box at the front and air space at the rear. Air is furnished by motor-driven forced-draft blowers.

Moultry, Standard Oil Veteran Retires

William Moultry assistant district manager at Seattle, Standard Oil Company of California, in charge of Northwestern Washington and Alaska territory, is retiring, effective October 1. Early in his career Moultry covered the waterfront for Standard Oil at San Pedro, later at Seattle.

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Carl B. Caldwell is announced as manager of the new Portland, Ore., district office of Robert G. Allen Pacific Co., Inc., at 519 NW Park Avenue, telephone Beacon 4092. Mr. Caldwell formerly was with Marden & Hagist and the John H. Marvin Co.

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Wagner & Niehaus, San Francisco marine repair firm, announce the appointment of Jack Favell as chief estimator and sales engineer. Mr. Favell recently resigned as assistant superintending engineer of the Army Transport Corps at Fort Mason.

MARION BAKER . . . newly-appointed to the sales staff of American Manufacturing Company.



American Appoints Baker in New Orleans

American Manufacturing Company, Noble & West Sts., Brooklyn 22, New York, Cordage Producers announce the appointment of Marion Baker to their sales staff.

Mr. Baker, who served in the United States Merchant Marine during the war, will work under the supervision of Walter Wellman, southern sales manager, at the New Orleans office located at 1319 Tchoupitoulas Street.

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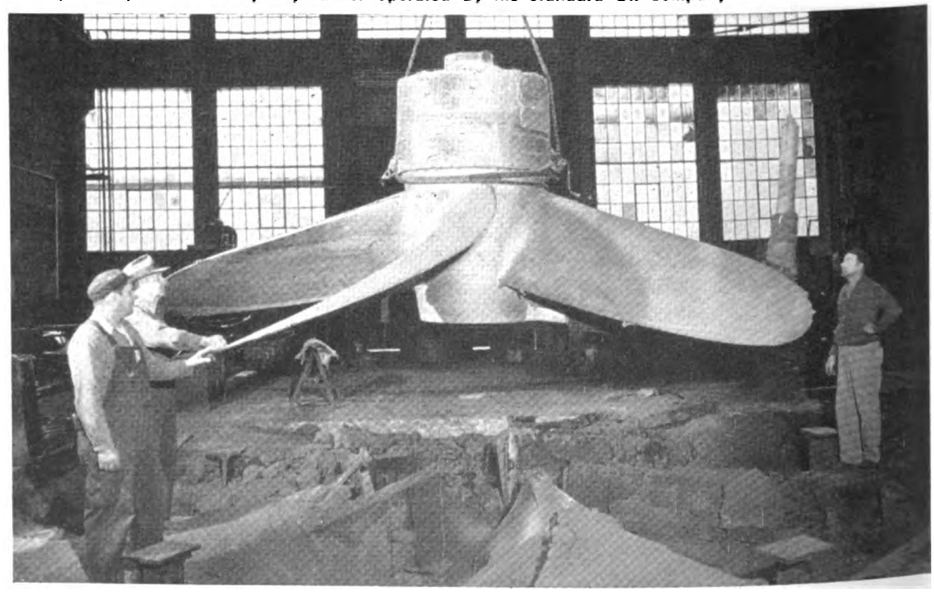
Wilson Offers New Tube Expander Folder

A new 6-page folder, (Bulletin 420) that gives data on Wilson-Dudgeon Tube Expanders for condensers, heat exchangers and general small tube rolling, is available, free, from Thomas C. Wilson, Inc. 21-11 44th Avenue, Long Island City 1, N. Y.

The folder explains that these expanders incorporate a new, improved, adjustable ball bearing thrust collar and are designed for efficient, easy rolling and maximum roll length adjustment for various tube sheet thicknesses. Four models, 41, 42, 43 and 44 are shown.

Also illustrated is a complete line of tools and wrenches for heat exchanger tube assembly as well as various popular models of Wilson Tube Cleaners.

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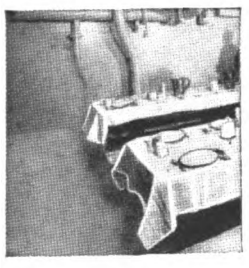
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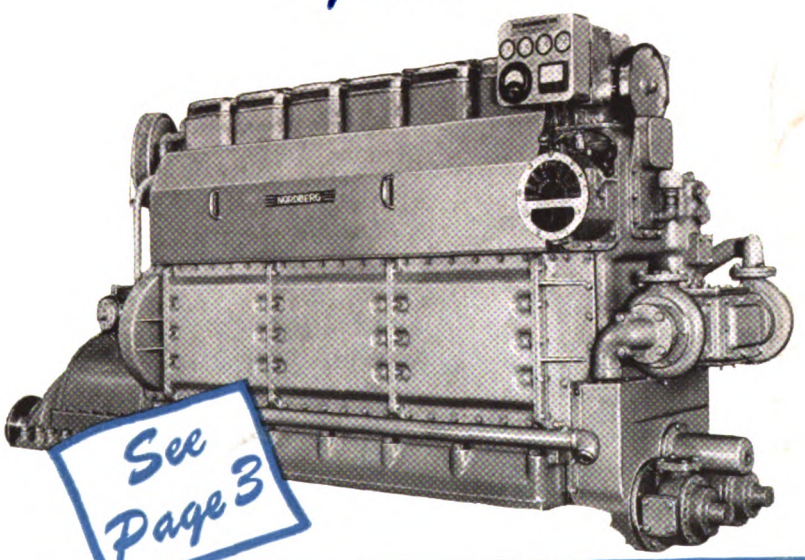
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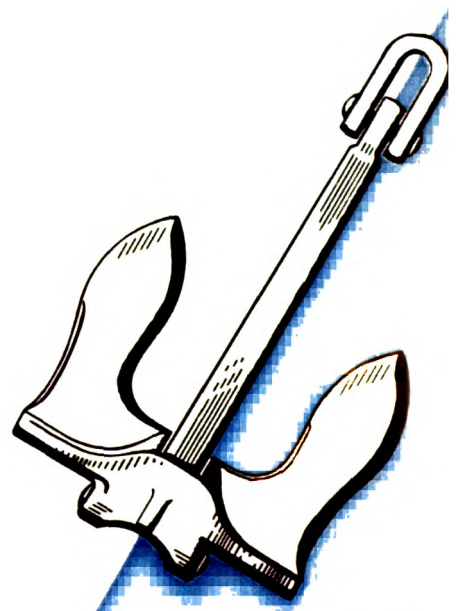


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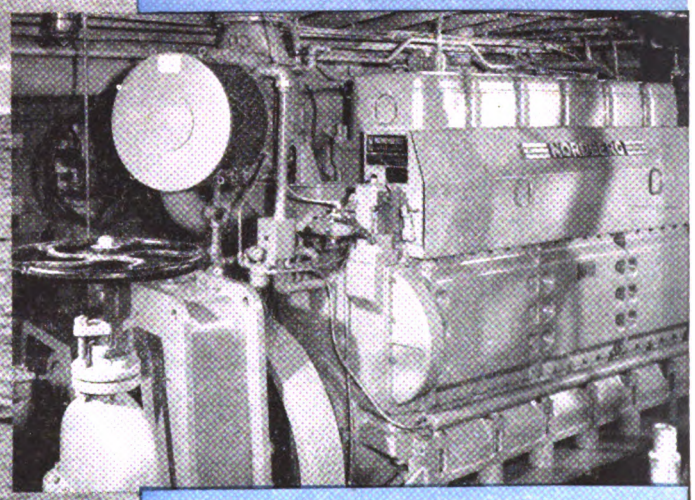
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This is just one example of the way in which Nordberg Diesels are used to provide dependable, economical power for all classes of marine service. *Write for information on Nordberg Diesels—available in sizes from 10 to 8500 h.p.*



NORDBERG MFG. CO.
Milwaukee 7, Wis.

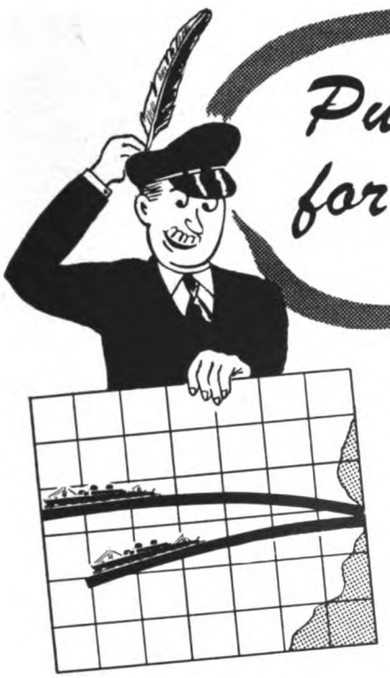
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BUSCH-SULZER
A DIVISION OF NORDBERG

NORDBERG
DIESEL ENGINES

NORDBERG MACHINERY

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Put A Feather In Your Cap for MORE MILES *on* LESS OIL!

Every "chief" whose power plant is functioning at top efficiency in relation to fuel oil economy, is entitled to put a feather in his cap!

Or put it another way—as acknowledged proof of top performance from steam plants and diesels because of utmost oil efficiency in terms of maximum BTU's. And top efficiency also means low maintenance cost of equipment, low cost in tank cleaning.

Clean, Fuelkleen-treated oil will give you substantial fuel savings—gratifying in the extreme with every half a knot speed step-up in the upper ranges where fuel cost is so important in relation to voyage time, distance and cost.

Fuelkleen, poured into fuel tanks, breaks up and removes sludge, foreign matter, oil-and-water emulsions. Thus only CLEAN oil, with an inexpensive Fuelkleen content, passes through and cleans rings and nozzles, AND KEEPS THEM CLEAN! Here's what this means . . .

Here's A Typical Case:

Before Fuelkleen was used on one vessel, the superheat temperature was 700° due to carbon deposits within fuel gas passes. After a Fuelkleen treatment, the cleansed oil, with its Fuelkleen content, increased the temperature to 735° F. Shell steam pressure on the fuel oil heaters ran 50 lbs. before the use of Fuelkleen, 30 lbs. following the Fuelkleen application.

A 3-months trial period showed a saving of $900 net in fuel. There was a fuel saving of 7 barrels a day, per day's run. In 240 operating days per year the total saving was 1680 barrels.

ADD THE 'PLUS' SAVINGS ACHIEVED BY THE ELIMINATION OF HAND LABOR COST AND TIME FOR TANK CLEANING. A Fuelkleen cleaning job can be done for as little as 5% of the cost of manual cleaning. And non-inflammable, non-injurious Fuelkleen PROTECTS against pitting and corrosion by ELIMINATING trouble-causing dirt and emulsions.

Find out more about

FUELKLEEN

Not A Conventional Cleaner but a Revolutionary Formula

Contact the Sumco Service office (see addresses below) nearest you for full details. Write, NOW, on your letterhead for the comprehensive, 20 page SUMCO MANUAL, covering all phases of power plant maintenance and cleaning.

144 CENTRE STREET
BROOKLYN 31, N. Y.

Sumco PRODUCTS INC.

178 FREMONT STREET
SAN FRANCISCO 5, CAL.

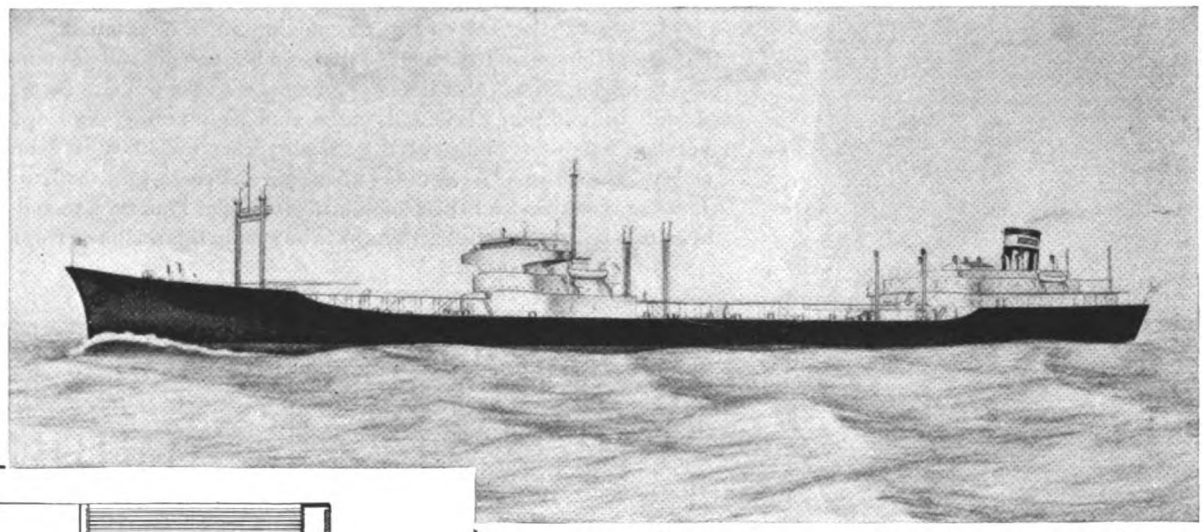
Manufacturers of **FUELKLEEN • TUBEKLEEN • HEATERKLEEN • AQUAKLEEN • OILKLEEN • SUMCO SUDS**

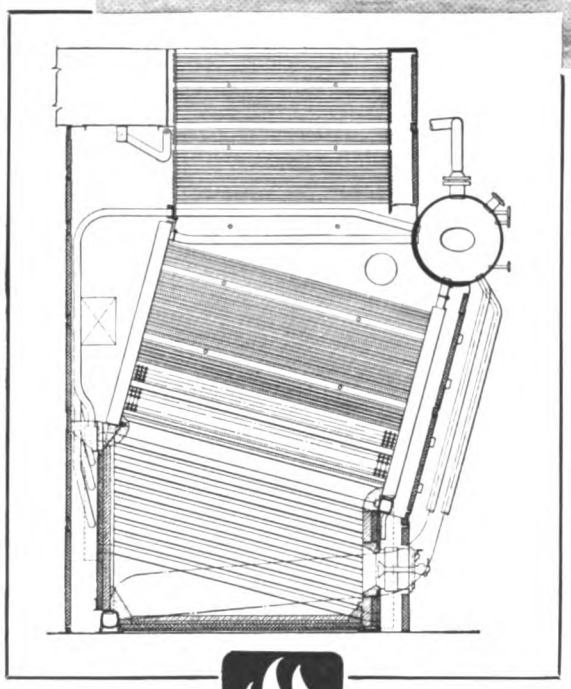
REPRESENTATIVES: Power Engineering and Supply Co., Seattle 4, Washington; Sumco Products Agency, San Pedro, California; Western Ship Service Co., San Francisco 5, California; Boiler & Engineering Service & Supply Co., Portland 9, Ore.; Galveston Ship Supply Co., Galveston, Texas; Galveston Ship Supply Co., Houston, Texas; Gulf Coast Marine Supply Co., Mobile, Ala.; Marine Industrial Service Company, New Orleans, La.; T. Roddy Lanigan Co., Miami, Florida; Hal F. Sterne Company, Charleston, South Carolina.

FUELKLEEN

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C-E Boilers power new 30,000-ton tankers





Artist's profile view showing one of the three new super-tankers now under construction for Philadelphia Tankers, Inc. Insert: Sectional elevation of C-E Boilers which will power the ships.

In April, May and June of this year keels were laid at the Camden yard of the New York Shipbuilding Corporation for three new 30,000-ton super tankers for Philadelphia Tankers, Inc.

These new ships, among the largest now under construction, will be 660′ overall with 85′ beam and have a draft of 34′ when carrying a full deadweight load of 30,000 tons. They are designed for a cargo capacity of 357,000 barrels and a service speed of 17 knots.

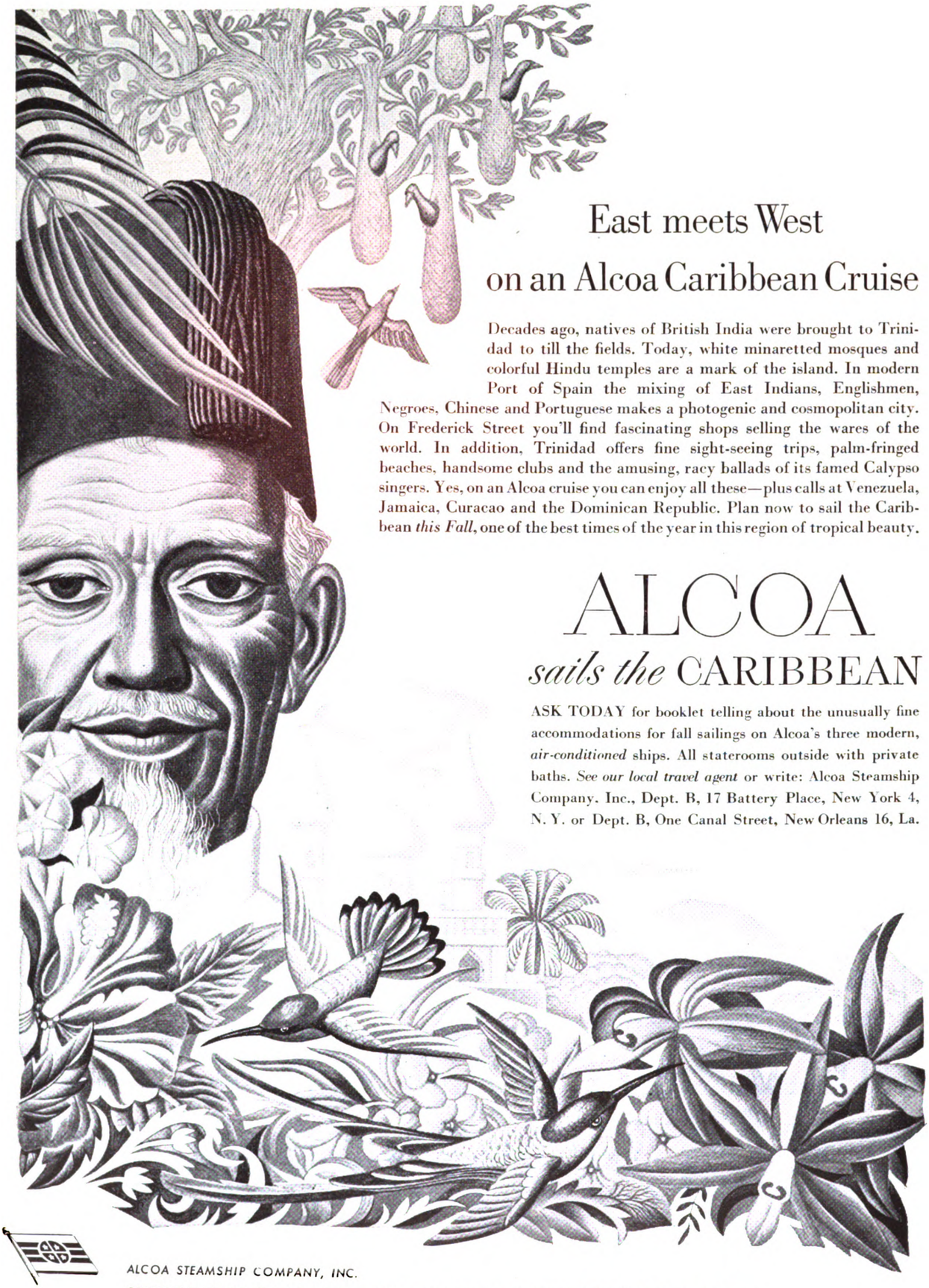
C-E Sectional Header Boilers, as illustrated at the left, will power this notable new tanker fleet. There will be two boilers of 65,000 lb of steam per hour each, normal capacity, on each ship. B-334

COMBUSTION ENGINEERING—SUPERHEATER, Inc.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT FOR STATIONARY AND MARINE APPLICATIONS

Pacific Coast: P. L. Johnson Co., Monadock Bldg., San Francisco, and Petroleum Bldg., Los Angeles

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East meets West on an Alcoa Caribbean Cruise

Decades ago, natives of British India were brought to Trinidad to till the fields. Today, white minaretted mosques and colorful Hindu temples are a mark of the island. In modern Port of Spain the mixing of East Indians, Englishmen, Negroes, Chinese and Portuguese makes a photogenic and cosmopolitan city. On Frederick Street you'll find fascinating shops selling the wares of the world. In addition, Trinidad offers fine sight-seeing trips, palm-fringed beaches, handsome clubs and the amusing, racy ballads of its famed Calypso singers. Yes, on an Alcoa cruise you can enjoy all these—plus calls at Venezuela, Jamaica, Curacao and the Dominican Republic. Plan now to sail the Caribbean *this Fall*, one of the best times of the year in this region of tropical beauty.

ALCOA *sails the* CARIBBEAN

ASK TODAY for booklet telling about the unusually fine accommodations for fall sailings on Alcoa's three modern, *air-conditioned* ships. All staterooms outside with private baths. *See our local travel agent* or write: Alcoa Steamship Company, Inc., Dept. B, 17 Battery Place, New York 4, N. Y. or Dept. B, One Canal Street, New Orleans 16, La.

ALCOA STEAMSHIP COMPANY, INC.

OFFICES IN BALTIMORE, CHICAGO, MOBILE, MONTREAL, NEW ORLEANS, NEW YORK, NORFOLK, ST. LOUIS, TORONTO

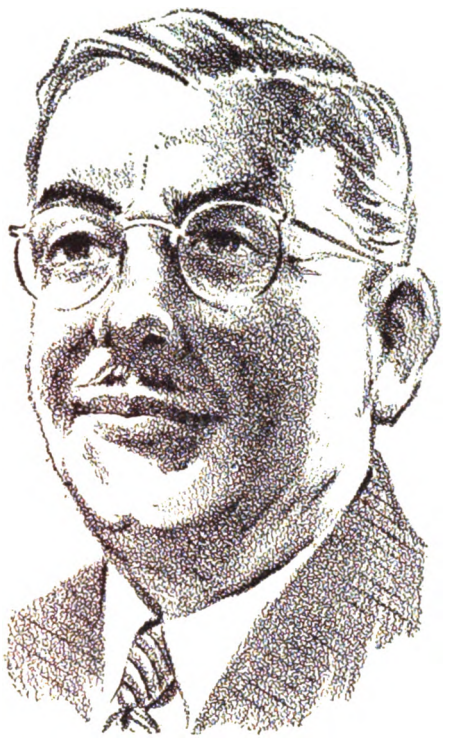
This advertisement in leading magazines is helping to acquaint the public with the excellent freight and travel facilities now offered by ships of the American Merchant Marine.

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Shell scientists give facts on

SHELL TALPA OIL

expressly developed for low-speed Diesels





1. *The big problem with a Diesel lubricating oil—*

is to give it enough intestinal fortitude for the job it has to perform. To one who knows his Diesel engines and oils, that means the toughness to resist *carbon,* for one thing. Plus the extra important ability to fight oxidation . . . offset *lacquer* and *sludge* formation. *And without once letting down in protective lubrication.*

2. *To meet these requirements—*



Shell scientists took the highest quality naphthenic crudes they could lay hand to. These they carefully distilled, chemically refined and filtered. Then they tested them for months in all types of low-speed marine Diesels. And your own engine will show you why their final choice was Shell Talpa Oil.



3. *In your own ship's engine—*

Shell Talpa Oil promises three things. *A low carbon forming tendency* . . . to assure free-working rings and less engine wear. *Excellent resistance to oxidation* . . . to keep sludge at an extremely low minimum. As well as *proper viscosity* to keep a tight seal between piston rings and cylinder walls in hottest temperatures. And you can count on that kind of protection at all times!

ON YOUR NEXT TRIP OUT, BETTER CHANGE TO THIS ECONOMICAL, DEPENDABLE MARINE DIESEL LUBRICATING OIL

SHELL

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new RUBBERIZED deck coating lasts a WHOLE YEAR

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Matson Navigation Company
- SS Lurline
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Pacific Far East Lines
- SS Fly Dragon
- SS Contest
- SS Sea Serpent

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WHEN USED WITH Steelcote PROCESS 1-2-3-4 for MAGNESITE DECKS



Save time, save money, save inconvenience. Actual ship tests prove you can do all these and have more beautiful floors too. Ask for details of Steelcote Floor Process at the ports listed at right or Steelcote Mfg. Co., St. Louis, Mo.



Save the cost of deck coating every few months — have more beautiful floors that water alone will clean

other Steelcote Problem-Solving Products

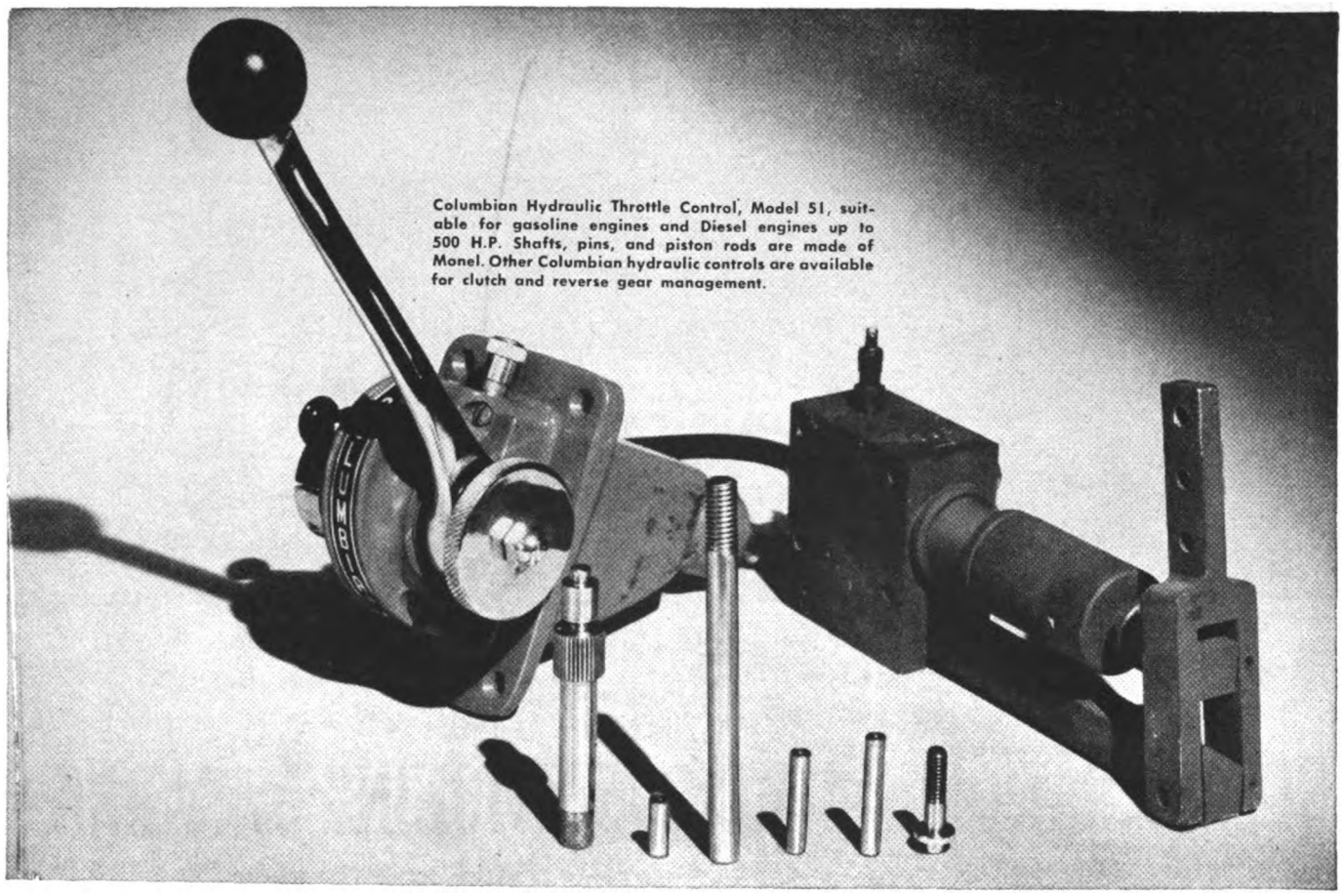
Transform mouldy, dingy, rusty shower and bath rooms into gleaming, porcelain-like beauty with Steelcote Damp-Tex No. 2 Pre-treated. Ready for use one hour after painting. Also **recommended for shaft alleys, bilges, deep tanks and bottoms. Damp-Tex Regular Pre-treated also resists rust, germs, mildew, does not contaminate food. Use on deep tanks, fresh water tanks, reefer boxes and refrigeration areas. Both products easy to apply to wet or dry surfaces.**

Steelcote Problem-Solving Products AVAILABLE IN THESE PORTS

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Boston — SELBY, BATTERSBY CO., INC.
Honolulu, T. H. — LEWERS & COOKE LTD.
Houston — GULF ENGINEERING CO., INC.
Mobile — MARINE SPECIALTIES COMPANY
New Orleans — GULF ENGINEERING CO., INC.
Newport News — SELBY, BATTERSBY CO., INC.
New York — SELBY BATTERSBY CO., INC.
Philadelphia — SELBY, BATTERSBY CO., INC.
Portland, Ore. — W. J. ROBBINS COMPANY
San Francisco — STANDARD DISTRIBUTING CO.
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Seattle — MARINE SERVICE, INC.

STEELCOTE MFG. CO.
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Columbian Hydraulic Throttle Control, Model 51, suitable for gasoline engines and Diesel engines up to 500 H.P. Shafts, pins, and piston rods are made of Monel. Other Columbian hydraulic controls are available for clutch and reverse gear management.

How Monel helps defeat wear and corrosion in COLUMBIAN HYDRAULIC REMOTE CONTROLS

Like the hydraulic brakes in a car, this fluid engine control system gives smooth operation, positive action, with a minimum of moving parts.

Compact and simple, it is easy to install and maintain.

Columbian Hydraulic Remote Throttle Controls consist of two units... transmitter and actuating receiver... joined by ¼ in. O.D. tubing. The fluid used is ordinary SAE 10W motor oil, making it unnecessary to stock special hydraulic fluids.

To insure long, trouble-free service life, Columbian's engineering department has specified that the parts subject to greatest wear... stop pins, piston pins, lever pivot pins, shafts... be made of *Monel**.

Rustproof *Monel*... a hard, corrosion-resistant, high Nickel alloy ... has long been a preferred metal among leading marine manufacturers and builders. *Monel* shafts, tanks, galleys, fittings, fastenings, and accessories go to sea in the nation's finest boats, from giant tuna clippers to pleasure run-abouts.

Next time you buy marine equipment, *look for Monel*... it's the mark of quality construction. And remember, too, that Inco's Technical Service Department is always ready to answer your metal questions.

WHAT ONE USER HAS TO SAY ABOUT COLUMBIAN HYDRAULIC REMOTE CONTROLS

Mr. Hugh Richter of Wilmington, Del., writes:

"I would no sooner think of going back to the mechanical throttle than I would consider buying an automobile with old-fashioned mechanical brakes. The hydraulic control permits much smoother throttle opening and closing and therefore better control of engine power. Another feature which appeals to me is the simplicity and economy of installation — no bell cranks, shafts, hinges, joints, etc. Nothing but a few feet of ¼-inch tubing.

"My own experience in having your Model 51's installed for twin engines was that the saving in labor more than offset the difference in cost over a first grade mechanical control."

For prices and full information about Columbian Hydraulic Remote Controls, Columbian Bronze propellers, and Monel propeller shafts, write to:

COLUMBIAN BRONZE CORPORATION
Freeport, Long Island, N. Y.



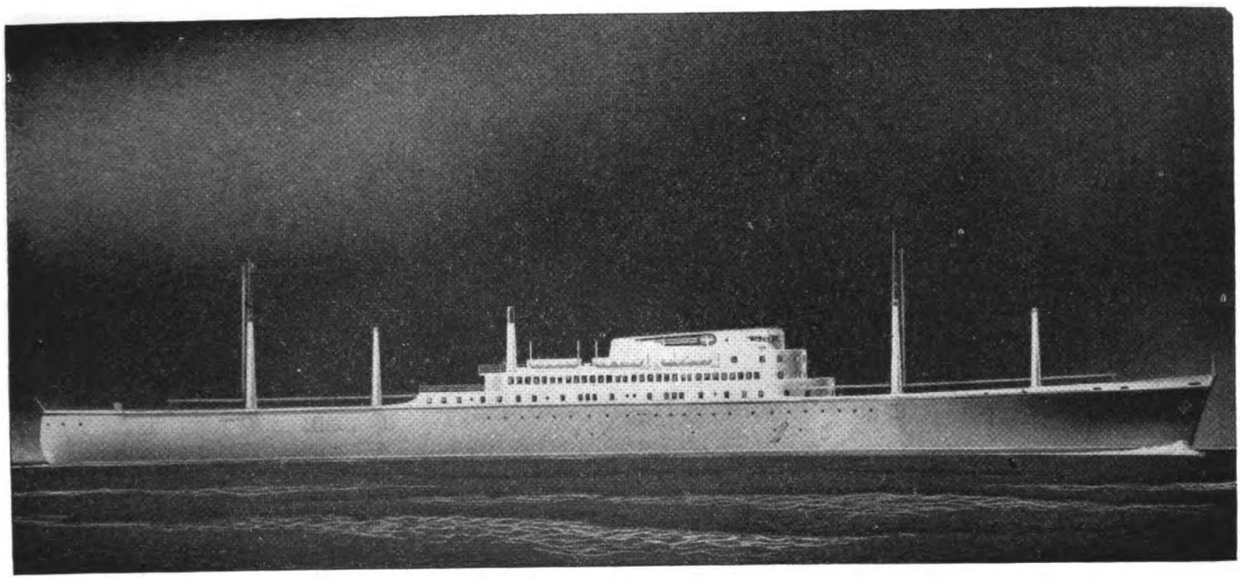
FEATURE **Monel*** *"... It's the SEAGOIN'* metal"*

*Reg. U. S. Pat. Off

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York 5, N.Y.

EMBLEM OF SERVICE INCO TRADE MARK

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One of three American President Lines' new round-the-world luxury ships, now building at New York Shipbuilding Corporation's yards, Camden, N. J.

REFRIGERATION and AIR CONDITIONING by CARRIER

Two Carrier Centrifugal Refrigeration Machines provide all cooling required for cargo, ship's stores and galley refrigeration, plus all the refrigeration needed for the complete air conditioning of each of the three magnificent new APL liners. These compact, electrically driven Carrier units will handle high and low temperature cooling requirements simultaneously. This advanced method of application, providing many important benefits, is one result of our 45 years' experience in the marine field. In that time, we have been responsible for the air conditioning and refrigeration of more than 10,000 vessels. For problems relating to new construction or conversion, consult Carrier.

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SERVICE AT ALL DEEPWATER U. S. PORTS AND PRINCIPAL PORTS IN THE WORLD

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THE OUTSTANDING WIRE ROPE IN MARINE SERVICE

THE ONE THAT LASTS LONGEST ...that's the most economical wire rope you can buy! And "Blue Center" Steel—made only by Roebling—gives wire rope that *extra-long* service life. With Roebling Preformed "Blue Center" you save dollars that really count.

To this, add the other advantages of Roebling Preformed wire rope. It's not inclined to twist and kink . . . is easy to handle and install. It can be cut without seizing. Broken wires stay flat and don't injure sheaves or drums.

You can have full confidence in Roebling rope . . . it is the accepted "standard" in industry today. There's a type and size of Roebling Preformed "Blue Center" Steel Wire Rope for every purpose. Have your Roebling Field Man recommend the best one for your requirements. John A. Roebling's Sons Company of California—San Francisco—Los Angeles—Seattle—Portland.

WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. ★ ***Boston,*** 51 Sleeper St. ★ ***Chicago,*** 5525 W. Roosevelt Rd. ★ ***Cleveland,*** 701 St. Clair Ave., N. E. ★ ***Denver,*** 1635 17th St. ★ ***Houston,*** 6216 Navigation Blvd. ★ ***Los Angeles,*** 216 S. Alameda St. ★ ***New York,*** 19 Rector St. ★ ***Philadelphia,*** 12 S. 12th St. ★ ***Pittsburgh,*** 855 W. North Ave. ★ ***Portland, Ore.,*** 1032 N.W. 14th Ave. ★ ***San Francisco,*** 1740 17th St. ★ ***Seattle,*** 900 First Ave.

ROEBLING

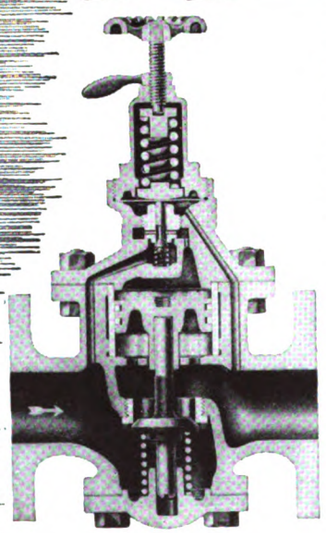
☆ A CENTURY OF CONFIDENCE ☆

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TRADE LESLIE MARK – the Reducing Valve and Temperature Regulator

you will Want

	Hardened & Ground Stainless Steel Main Valve	Stellited Seat for all pressures	Hardened & Ground Stainless Steel Pilot or Controlling Valve	Hardened & Ground Stainless Steel Cylinder Liner	Corrosion and Heat Resistant Alloy Internal Springs	Full Spring Temper Diaphragm for long life	Copper Clad Sheet Packing Gasket	Interchangeable Pilot Valve and Seat. Sizes ½"—6" incl.
LESLIE	X	X	X	X	X	X	X	X



Class L-3 Pressure Reducing Valve

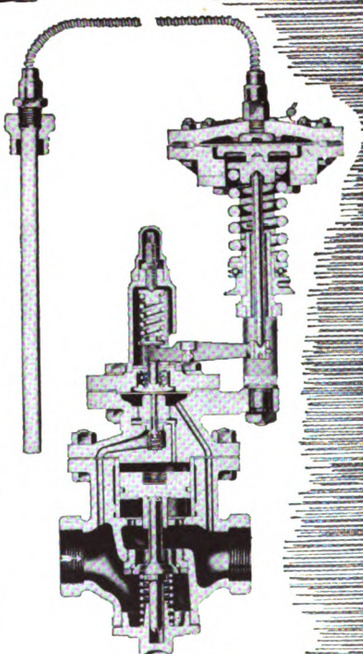
Check the above list of features you don't expect—but have always wanted to find—in a Reducing Valve* or Temperature Regulator*. Note how LESLIE gives you all of them as Standard Equipment!

In LESLIE Reducing Valves* or Temperature Regulators* you can obtain *complete* interchangeability* of internal parts.

These and other Exclusive Features in LESLIE Pressure Reducing Valves, Pressure Controllers, Pump Governors and Temperature Regulators provide an unbeatable combination.

Regardless of the type of service—Steam, Air or Gas, you are assured of longer-lasting, more accurate, trouble free Regulators when you specify LESLIE.

Lowest Overall Cost per Operating Year



Class LTCO Temperature Regulator

*SEND FOR
Bulletin 461B —Pressure Reducing Valves
Bulletin 464A—Temperature Regulators
Bulletin 468 —Interchangeability

ESTABLISHED 1900 LESLIE CO.

LESLIE CO. 229 Grant Avenue Lyndhurst, New Jersey

Look for LESLIE Regulators under "Valves" or "Regulators" in your Classified Telephone Directory in the following cities where LESLIE factory-trained engineers are located.

Albany, N. Y.
Atlanta, Ga.
Baltimore, Md.
Beaumont, Tex.
Birmingham, Ala.
Boston, Mass.
Bridgeport, Conn.
Buffalo, N. Y.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Denver, Colo.
Detroit, Mich.
Galveston, Tex.
Greensboro, N. C.
Greenville, S. C.
Honolulu, Hawaii
Houston, Texas
Indianapolis, Ind.
Kansas City, Mo.
Kingsport, Tenn.
Los Angeles, Calif.
Louisville, Ky.
Milwaukee, Wis.
Minneapolis, Minn.
Mobile, Ala.
Monroe, La.
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New Orleans, La.
New York, N. Y.
Orlando, Fla.
Philadelphia, Pa.
Pittsburgh, Pa.
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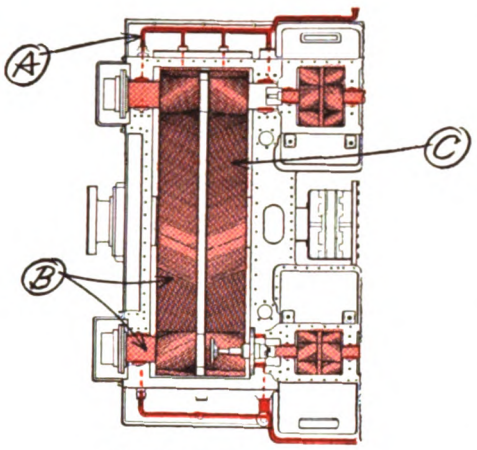
PRESSURE REDUCING VALVES • PUMP GOVERNORS • PRESSURE CONTROLLERS
TEMPERATURE REGULATORS • SELF CLEANING STRAINERS • LESLIE-TYFON WHISTLES

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STANDARD ENGINEER'S CASE FILE

Case 1148—Eliminating Turbine Oil Deterioration



TURBINE REDUCTION GEARS

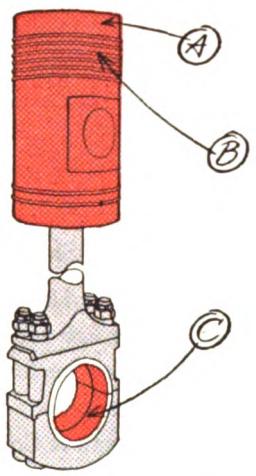
A laboratory analysis of a sample of Calol OC Turbine Oil taken from a continuously operating, heavily loaded turbine after four years of use showed the oil had not increased in acidity or deteriorated in any way. Lines, sumps and governor control were clean and bearings, gears and other parts in good condition. Calol OC Turbine Oil comes in 4 grades: 9, 11, 15, 19.

A. Contains a highly effective oxidation inhibitor — prevents the formation of sludge, gum, lacquer and deposits in lines and on parts.

B. Corrosion inhibitor stops rusting — in official tests, Calol OC Turbine Oil in both fresh and salt water kept steel strips from rusting while they were in the water-oil mixtures for 48 hours.

C. Has excellent metal-wetting ability and high film strength — withstands the heaviest gear and bearing loads and reduces wear.

Case 1153—Reducing Operating Costs on Large Marine Diesels



MARINE DIESEL PISTON ASSEMBLY

Many ship operators have proved that Calol Marine Oil reduces lubricating costs, prevents excessive friction and wear and maintains tight seals in large Diesel propulsion engines. Recommended for all marine Diesels where an uncompounded oil is satisfactory. Comes in five grades: 55, 65, 75, 90, 120 — SAE 20 to SAE 60.

A. Has high viscosity index — resists highest operating temperatures and minimizes gum formation.

B. Made from selected paraffinic type oils with low carbon residue — resists formation of carbon and sludge deposits that stick rings, cause blow-by.

C. Various grades have low pour points ranging from zero downward — assure good lubriation in all atmospheric and operating conditions.

Because of its high resistance to oxidation, non-corrosive and lubricating qualities, Calol Marine Oil is also used in enclosed reduction gears.

For additional information and the name of your nearest Distributor, write

STANDARD OIL COMPANY OF CALIFORNIA

225 Bush Street, San Francisco 20, California

The California Oil Company
Barber, N. J., Chicago, New Orleans

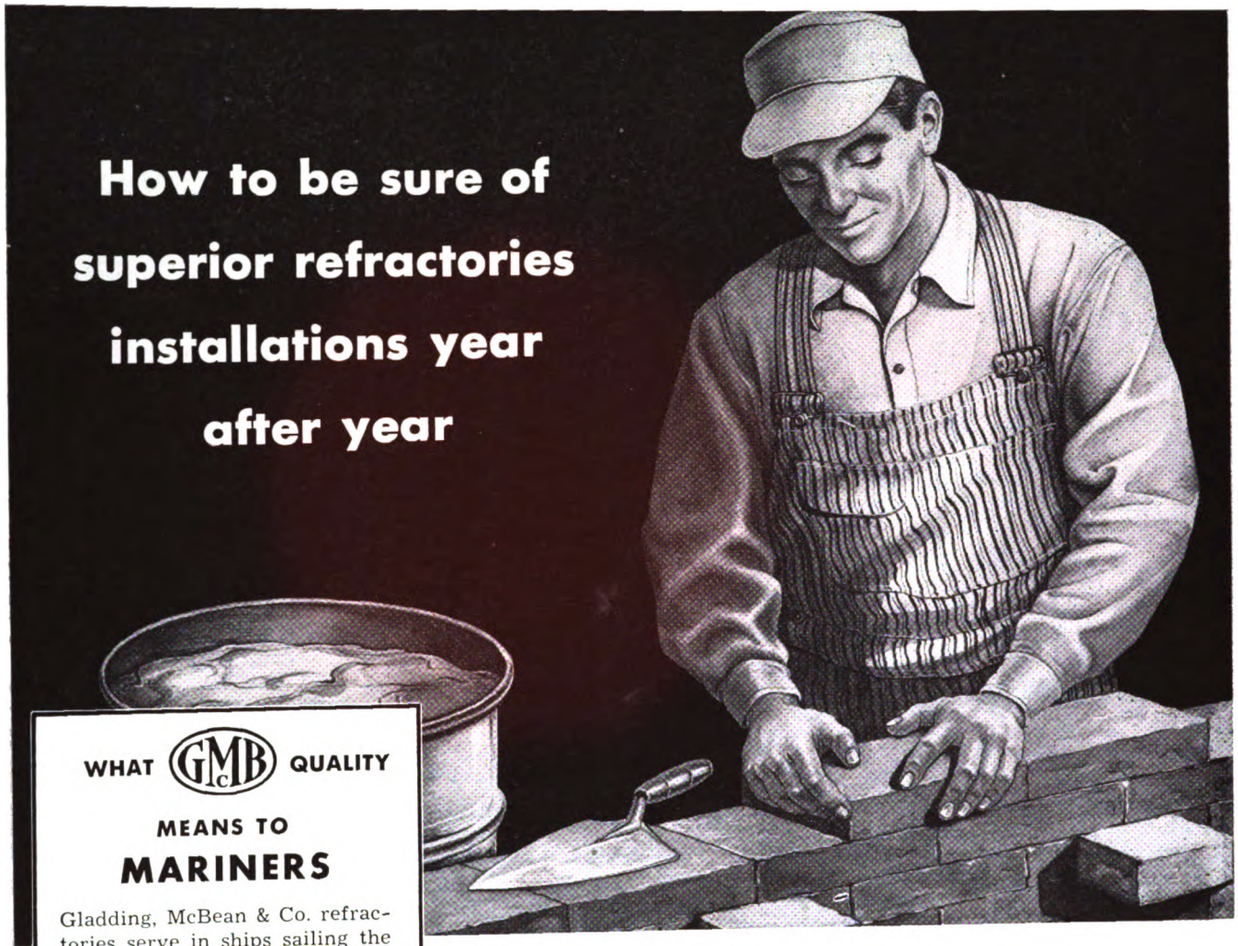
The California Company
17th and Stout Streets, Denver 1, Colo.

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WHAT GMB QUALITY

MEANS TO

MARINERS

Gladding, McBean & Co. refractories serve in ships sailing the seven seas. Our First Quality and Super Duty Refractories give better, longer, more economical service in marine boilers because they are resistant to spalling and abrasion and withstand high loads.

GMB Plastic Firebrick sets the standard for front wall construction.

GMB power-press, hydraulic and hand-mold production methods insure uniformity of size, ease of handling and economy of mortar.

GMB wide variety of standard and special shapes and sizes insures prompt delivery, fast installation. Our full line of refractories includes plastics, coatings, mortars and castables for complete, quality refractories service.

• The life of your refractories depends a great deal on the specialties used in their installation. The combination of Gladding, McBean & Co. firebrick and the specific mortars, plastics, castables and coatings we make to go with them is your assurance of longer, better service at lower cost.

Against a background of 75 years of ceramic engineering, our staff of specialists not only keep abreast of all developments in their field but also study constantly where it counts most to you: *right in our customers' own plants.*

Our access to more than 30,000 acres of top-quality raw materials—enough for far into the future—assure our ability to supply all your needs with reliable, economical refractories. And the strategic locations of our plants and warehouses assure quick, economical delivery.

If you are planning a new installation—or are looking for better maintenance performance in your present equipment—call your Gladding, McBean & Co. sales engineer. Talk over your problem with him. He can help you.

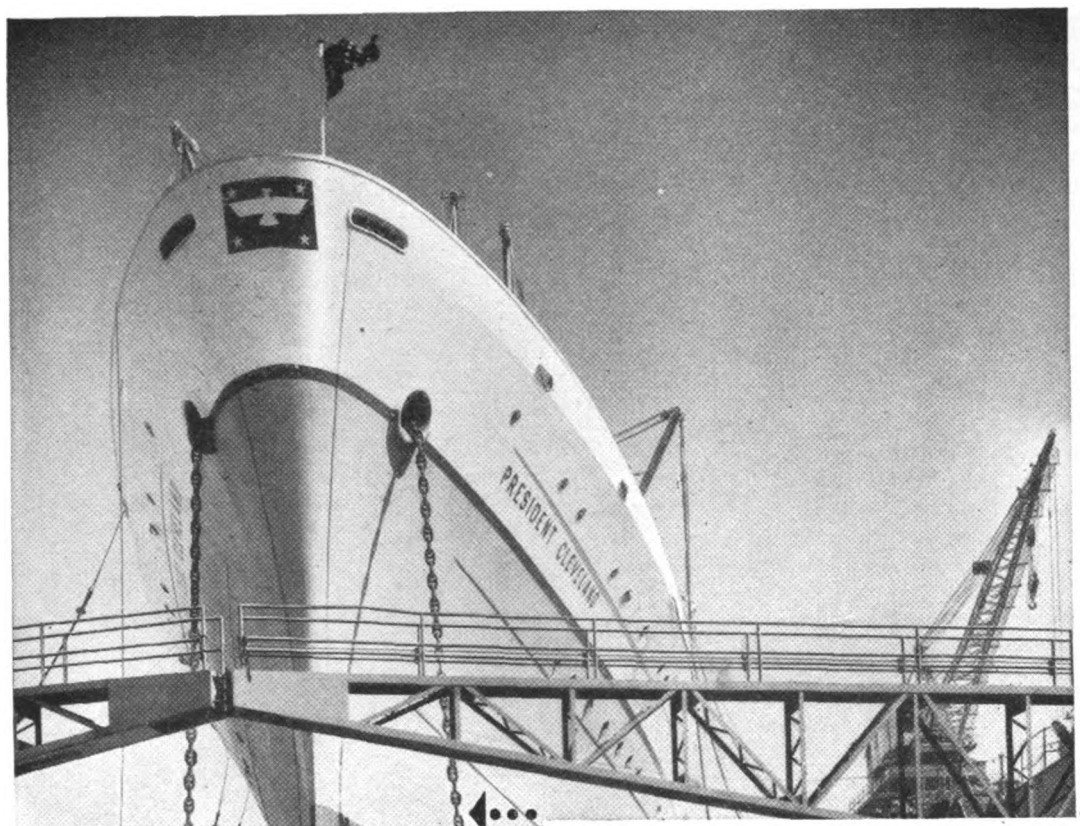
REFRACTORIES—A SPECIALIZED GLADDING, McBEAN & CO. PRODUCT

Other quality ceramic products include Hermosa Tru-Joint Tile, Face Brick, Roof Tile, Floor and Patio Tile, Flue Lining, Vitrified Clay Pipe, Ceramic Veneer, Glazed Block, Franciscan Earthenware, Franciscan China

Offices at Los Angeles • San Francisco • Portland • Seattle • Spokane

75 YEAR SINCE 1875

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There's no better chain made than

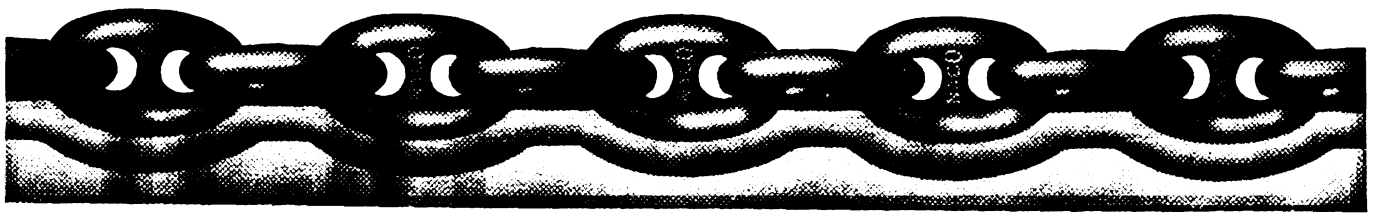
NACO ANCHOR CHAIN

TRADE MARK

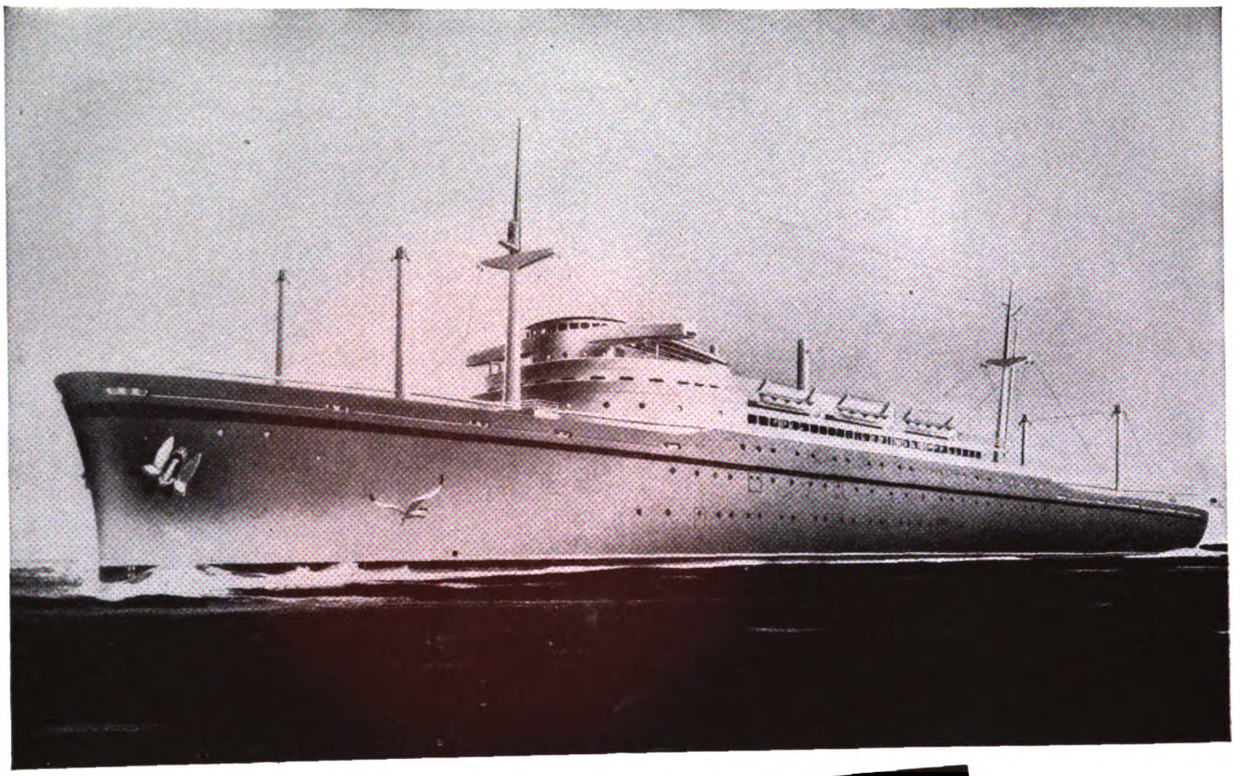
For strength, safety and ease of handling, you can't buy a chain that matches NACO. And, always include NACO or E-Z Joining Links and NACO Anchor Joining Links.

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY
Cleveland, Ohio

Pacific Coast Representative
C. J. Hendry Company, 27 Main Street, San Francisco 5, Calif.



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LIFE BOATS by WELIN for 394 PERSONS

DESIGNED by GEORGE SHARP Naval Architect and Designer

Being BUILT by N. Y. SHIPBUILDING Corp., Camden, N. J.

Illustrated above is one of three passenger and cargo vessels USMC Design P2-S1-DN1 ordered by the American President Lines. These vessels will be equipped with Welin lifesaving equipment to accommodate 394 persons.

When the command "To your life boat stations" is announced every davit, life boat and winch can be depended upon to give the coordinated, unfailing performance for which it was designed.

Welin equipment is designed to provide a maximum of safety, with long life and low maintenance cost . . . it resists corrosion. The light weight of Welin equipment eliminates tons of "no paying ballast."

Each of these three vessels will be equipped with:

1. **26′ aluminum motor propelled radio equipped life boat.**
2. **26′ aluminum oar propelled rescue boats.**
3. **30′ aluminum hand propelled life boats with an inner hull.**

Six sets of Crescent type davits and winches and six modern life boats will equip these new vessels with the most up to date sea-going lifesaving equipment that is available.

Welin has acquired a lot of know-how by building the finest lifesaving equipment for the past 48 years. It will pay you dividends if you call Welin when lifesaving equipment is being planned.

TRAVEL AND SHIP BY AMERICAN VESSELS

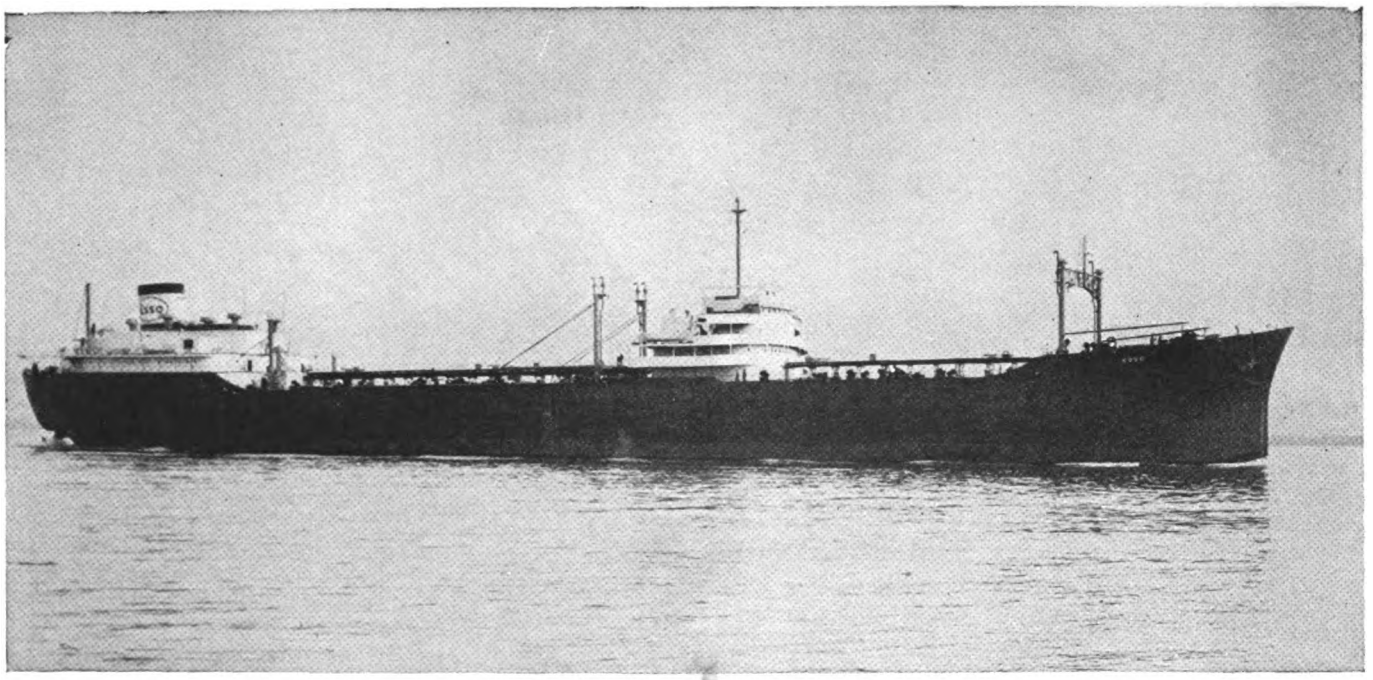
Welin

WELIN DAVIT AND BOAT

DAVIT AND BOAT DIVISION OF CONTINENTAL COPPER & STEEL INDUSTRIES, INC.

PERTH AMBOY • NEW JERSEY
SAN FRANCISCO • CALIFORNIA

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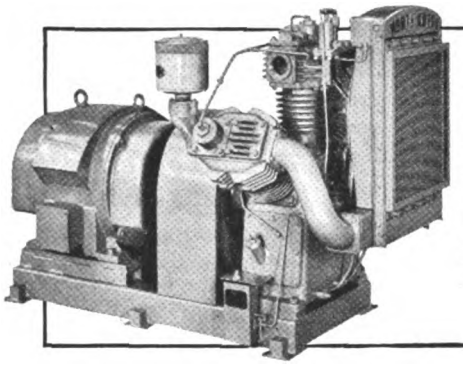


AIR FOR ALL PURPOSES

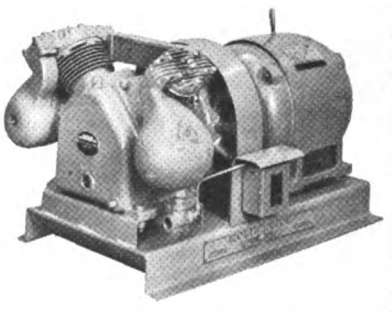
Worthington Air Compressors on the New Super-Tankers

The new super-tankers being built by both Sun and Newport News are equipped with Worthington Soot Blowers & Ship's Service Air Compressors, and Worthington Combustion Control Air Compressors. Especially designed for shipboard service, these completely automatic compressors are compact and rugged, yet as light in weight as is consistent with best engineering practice.

Worthington's many years of Marine experience have been built into these vital auxiliaries which give daily proof that *there's more worth in Worthington*. Consult with Worthington's Marine engineers to solve your shipboard Air Compressor problems by contacting *Worthington Pump and Machinery Corporation, Marine Division, Harrison, N. J.*



Worthington Soot Blower & Ship's Service Air Compressor Model V3A2 ... Size: $\frac{6}{6}/5$ x 5 in. 110 cfm actual . . . 125# . . . 30 hp . . . 870 rpm.



Worthington Combustion Control Air Compressor Model TB . . . Size: $3\frac{7}{8}/2\frac{5}{16}$ x $2\frac{1}{8}$ in. 20 cfm actual . . . 125# . . . 7½ hp . . . 1750 rpm.

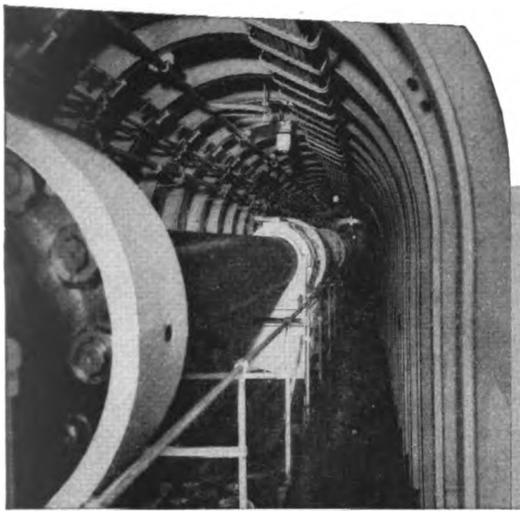
WORTHINGTON

M9-3

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Centrifugal, Steam, Power, Vertical Turbine & Rotary Pumps
Air Conditioning Equipment • Condensers, Ejectors & Deaerating
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SHAFT ALLEY Chatter

American Export Lines Promote Veteran Officials

John E. Slater, formerly executive vice president of American Export Lines, recently was elected president of the company to succeed the late William H. Coverdale.

Joseph A. Thomas of New York was elected Chairman of the Board, a position likewise held by Mr. Coverdale.

John F. Gehan was elected executive vice president of the line and also elected to board membership.

Other promotions in the company are: L. S. Andrews, operating manager; W. H. Dausey, freight traffic manager, and George C. Gaede, passenger traffic manager, have been elected vice presidents. All will report to Mr. Gehan.

B. A. Robinson has been named operating manager to succeed Mr. Andrews and Captain Sydney S. Blackledge, presently port captain, has been named marine superintendent to succeed Mr. Robinson.

T. Y. Newman, for many years assistant freight traffic manager, has been appointed freight traffic manager.

J. E. Bailey, assistant passenger traffic manager, has been appointed passenger traffic manager.

Hugh M. Gillespie remains as vice president, secretary-treasurer, and will report to the president.

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Pacific Far East Enters Mediterranean Service

Pacific Far East Line is expanding its operations to serve the Mediterranean on a scheduled basis.

The line has scheduled the WILLIAM LUCKENBACH to sail from San Francisco Oct. 5 for calls at Genoa, Venice, Trieste, Piraeus and Beirut.

The GEORGE LUCKENBACH will sail from San Francisco Nov. 4 for calls at the same ports. Both of these ships are now under charter to States Marine Lines.

PFEL has been making calls at Beirut with shipments of pipe for oil companies, but heretofore, has not called at Mediterranean ports.

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Lykes Vessel Again Saves Lives at Sea

Saving lives at sea has become an almost daily routine with the men and ships of the Lykes Lines fleet. For the second time in three weeks, and the eighth time in 18 months, a Lykes vessel rushed to the aid of injured men.

The latest rescue was accounted for by the ss WILLIAM LYKES in the Pacific Ocean off the Mexican Coast, while the ship was enroute to New Orleans from the Far East, according to details related by Captain Karl Sandberg of Gulfport, Mississippi, master of the Lykes vessel.

Shortly before midnight on August 9, the Lykes vessel's radio operator picked up a weak distress signal and some time later sighted a visual SOS dead ahead and at a distance of about 15 miles. Rushing to the scene under forced draft it was found that the SOS came from the disabled schooner, LOS AMIGOS, of Newport, California.

Seven men were aboard the craft and earlier in the day two of them had been severely burned when a gasoline auxiliary engine exploded setting the schooner afire. All navigation charts were destroyed. The schooner suffered considerable damage before the flames were extinguished during a two hour battle. It was found that the schooner crew was sending distress signals on a war surplus transmitter operated by a hand crank.

After providing the schooner with new navigation charts the ss WILLIAM LYKES altered its course and proceeded to the nearest port at Acapulco, Mexico. Details for treating the two burned men were received by radio from the U. S. Marine Hospital at San Francisco and the treatment was carried out while the Lykes vessel proceeded to Acapulco where they were hospitalized.

The other five men aboard the LOS AMIGOS remained aboard the damaged vessel planning to make Acapulco under sail power.

⚓ ⚓ ⚓

General Steamship Corporation, Ltd., announces the removal of both its San Francisco and Los Angeles offices to new and larger locations. The San Francisco headquarters are now in the firm's own building at 432 California Street and the Los Angeles offices are in the new General Petroleum Building, 612 South Flower Street.

NEW PRESIDENT OF AMERICAN EXPORT LINES . . . JOHN E. SLATER, recently elected to the presidency succeeding the late William H. Coverdale.

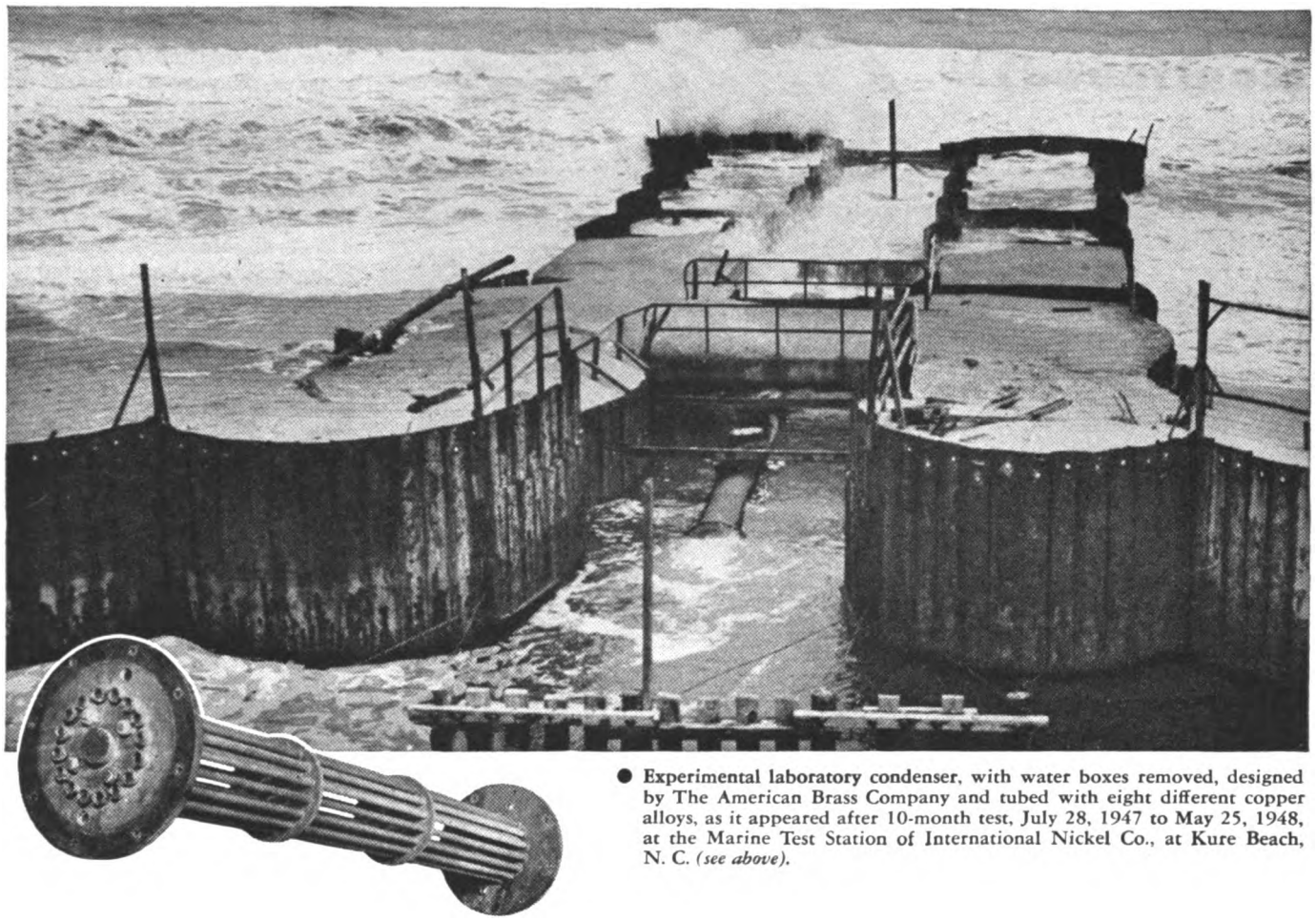


JOSEPH A. DE LA PENA is the new Assistant Pacific Coast Manager of States Marine Corporation at San Francisco, succeeding CARL CULVER, who has been transferred to Tokyo, as the line's manager for Japan and the Far East.

Mr. De La Pena was with the United States Maritime Commission for six years as assistant Atlantic Coast Director. Previously he was for 23 years with the American-Hawaiian Steamship Co. in New York and was Assistant District Manager there.



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● **Experimental laboratory condenser**, with water boxes removed, designed by The American Brass Company and tubed with eight different copper alloys, as it appeared after 10-month test, July 28, 1947 to May 25, 1948, at the Marine Test Station of International Nickel Co., at Kure Beach, N. C. *(see above).*

ANACONDA Cupro-Nickel 754

(10 PERCENT NICKEL CONDENSER TUBE)

MANUFACTURED AND SOLD UNDER U. S. PATENT NO. 2,074,604

Shows High Resistance Under Accelerated Test

TEN months of testing with high velocity sea water at Kure Beach, N. C., demonstrate the superiority of Anaconda Cupro-Nickel 754 (nominal composition, copper 89.25 percent, nickel 10 percent, iron .75 percent) over a number of widely used condenser tube alloys.

The purpose of the test was to determine the resistance of various standard tube alloys to corrosion-erosion type of deterioration caused by turbulent flow of sea water. The tubes are .625″ O. D., 18 gage (.049″), and 61 inches long. The average velocity of sea water flowing through the tubes, during the continuous 10-month test, was 11.7 feet per second. Water temperature varied from 45°F. to 85°F., according to the season of the year.

This test, and performance records where Cupro-Nickel 754 tubes have been in service under severe operating conditions, indicate that this tube and tube sheet alloy will give economical service for central station and marine condensers handling clean and some types of polluted sea waters. The American Brass Company welcomes opportunities to discuss problems relating to condenser tubes, and the services of its Technical Department are available for assistance in selecting alloys to meet specific operating conditions. 49125

ANACONDA

Anaconda

CONDENSER TUBES

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

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SHAFT ALLEY (continued) Chatter



CALIFORNIA ASSOCIATION OF PORT AUTHORITIES hold annual meeting in San Diego and elect the following officers: left to right the photograph shows FRED D. PARR, Richmond, treasurer; M. W. DAUBNEY, Long Beach, Vice President; ROBERT H. WYLIE, San Francisco, President; CLAIRE V. GOODWIN, Oakland, outgoing President, and CARL SMITH, San Francisco, Secretary.

Coastwise Line Expands Service with 2 New Ships

W. T. Sexton, president of Coastwise Line, San Francisco, recently announced purchase of two 10,500-ton EC-2 Liberty type vessels, JOEL CHANDLER HARRIS and JAMES LICK, for use in the California-Puget Sound-Alaska direct service. The new operation will supplement Coastwise Line's existing direct service between California, Oregon and Alaska, and will be in addition to its regular coastwise service.

In commenting on the purchase of the two vessels, Sexton indicated that his company considered the move a stop-gap measure. He said Coastwise Line is presently engaged in a program for the construction of vessels specifically adapted for the coastwise Alaska trade. This program, while still in initial stages, is being effected by the company in consultation with offshore labor unions, and initial proposals for the construction of such vessels have already been placed before the United States Maritime Commission.

Coastwise Line inaugurated its California-Oregon-Alaska trade route in mid-1948, when it became the first common carrier service from California and Oregon to the northern territory in many decades.

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J. L. Braun Named To Sales Position With Wisco, Portland

The appointment of James L. (Jim) Braun as sales representative for Willamette Iron and Steel Company ship repair division, Portland, Oregon, has been announced by J. C. "Tex" Hayes, marine superintendent.

Braun was with Commercial Iron Works, Portland, during the first World War, and for 12 years prior to the outbreak of World War II, when he was called to duty with the Navy to become assistant supervisor of shipbuilding with offices at the Willamette plant. He was transferred to Philadelphia after VJ day for duties in connection with Navy layup of ships.

Other executive personnel attached to Willamette Ship Repair Division in addition to Hayes include Lew Hallmark, executive assistant, and Jess Carson, engineer. Hayes, Hallmark and Carson have been with the company since 1941.

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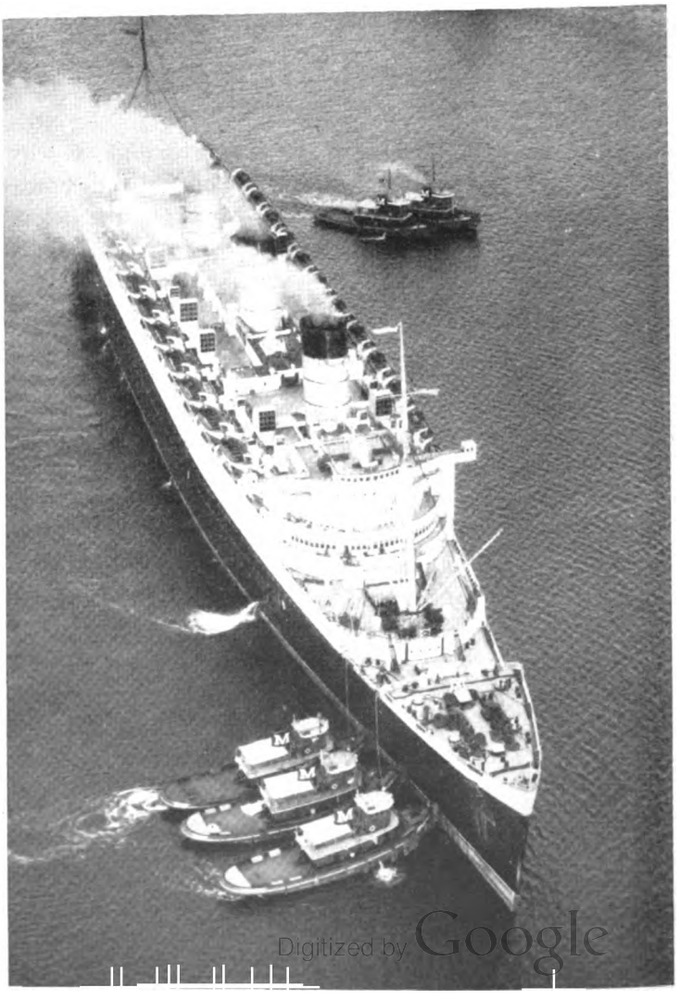
Portland Propeller Club Nominates Officers

Nat A. Moore, Williams Dimond and Company, has been elected president of the Propeller Club, Port of Portland. Named to serve with him are: D. W. Lawrence, W. R. Grace and Company, vice president; Drew Haines, Haines Enterprises, secretary; H. C. Ashton, Commercial Trading and Shipping Company, treasurer; and Thomas J. White, attorney; R. B. Gilliam, Pacific World Shipping Company; Robert L. Cormack, Bank of California, N. A.; Jack R. Dant, States Steamship Company; R. L. Boone, West Coast Terminals, Inc.; and Wendell Gray, attorney; to the board of governors.

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L. C. Fleming, San Francisco, Pacific Coast director, United States Maritime Commission, announces the Commission's San Pedro office has been closed permanently and the Seattle office moved from the Dexter Horton Building to the New World Life Building, 618 Second Avenue. Activities of the San Pedro office will be handled by the San Francisco staff. Jos. Hare, San Pedro port representative, has been transferred to Seattle to succeed Wm. Hayes, who is retiring.

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AN INNOVATION in the docking of the QUEEN MARY when she was berthed in New York harbor by five Diesel-electric tugs instead of the customary ten steam tugs heretofore required. Docking operations were handled by the Moran Towing & Transportation Company which recently took delivery of the last of five new tugs especially designed for this operation and built by Levingston Shipbuilding Corp., Orange, Texas.

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for 50 years

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A half century of Caribbean service underscores today's function of the Great White Fleet. Here are fast, fully-refrigerated cargo and passenger vessels—modern and spotless—fit, willing and able to serve shippers and travellers in Inter-American trade. Competent staffs, afloat and ashore, and modern equipment and facilities are yours to command.

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New York 6: Pier 3, North River

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SHAFT ALLEY (continued) Chatter

PNW Section of SNAME Meets at Gearhart for Annual Session

Billed as the third annual Gearhart meeting, the Pacific Northwest Section of Society of Naval Architects and Marine Engineers met at Gearhart, Oregon, in late August.

A buffet supper, a golf tournament, salmon fishing, and a banquet were among the entertainment features on the program.

At the technical session Paul E. Forsythe, Western Gear Works, Seattle, led a discussion on the subject: "Hydrodynamic Transmissions for Marine Deck Machinery." See page 44 of this issue for the complete paper.

L. S. Baier, L. S. Baier and Associates, Portland, used still pictures and motion picture reels to describe the "Baier System of Longitudinal Construction." He commented: "It will be noted that building facilities are very limited and meager. A crane shown in the motion picture was used for limited periods in hoisting the plates, bulkheads, and other heavy sections together with house and pilot house. Aside from the crane, the other machines and equipment consisted of 300 amp. welders, cutting torches, hydraulic jacks, air compressor, and come along hoists, and the usual small hand tools. In short, a boat can be constructed using this system without a heavy outlay of shop tools and equipment."

He recorded the first hull constructed using this system was a 55 foot otter trawl, giving a good account of itself after 17 years in active service. Noting that under the Baier system the keel is layed in reverse—upside down—he observed: "It is interesting to note that most of the small boats built since the war were constructed in the inverted position. This method was used very successfully during the war. The writer constructed 42 landing craft control boats 56 feet long and five harbor tugs 65 feet long for the Navy, and in all cases there was no evidence of a hull getting out of alignment. The fact that the same cradle was used over the entire program without repairs is evidence that no undue strains were set up in the welding process to cause distortion as at all times the deck was in perfect contact with the cradle area."

Emphasizing that his paper was more properly titled "Maneuvering Characteristics of the mv WARRIOR Improved by Reversing Propeller Rotation," H. E. Lovejoy, vice president and naval architect, Puget Sound Freight Lines, Seattle, developed that his discussion explained a specific instance of operator problem and steps taken to attain a solution. He concluded: "It is hoped that the account of our experience may be helpful to others."

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Vancouver, B.C. Leaders Organize Plimsoll Club

Members of British Columbia's shipping and marine fraternity recently formed the Plimsoll Club at Vancouver, with F. H. Clendenning, Empire Shipping Co., Western Canada's dean of shipping, as president.

Other officers are: Captain J. S. Thomson, Anglo Canadian Shipping Co., vice president; C. A. Blow, Canada Shipping Co., secretary-treasurer, and directors: O. B. Ommundsen, H. A. Borgenson, Ltd.; C. McLean, Union Steamships, Ltd.; A. B. Pilkey, Northwest Distributors, Ltd.; C. A. Richardson, International Paint Co.; J. A. Bird, Campney, Owen, Murphy and Co., and Mr. Clendenning.

A goal of 500 members was set and in mid-September more than 250 had joined. A banquet at the Hotel Vancouver will feature the inaugural meeting November 18th.

Objects of the organization are:

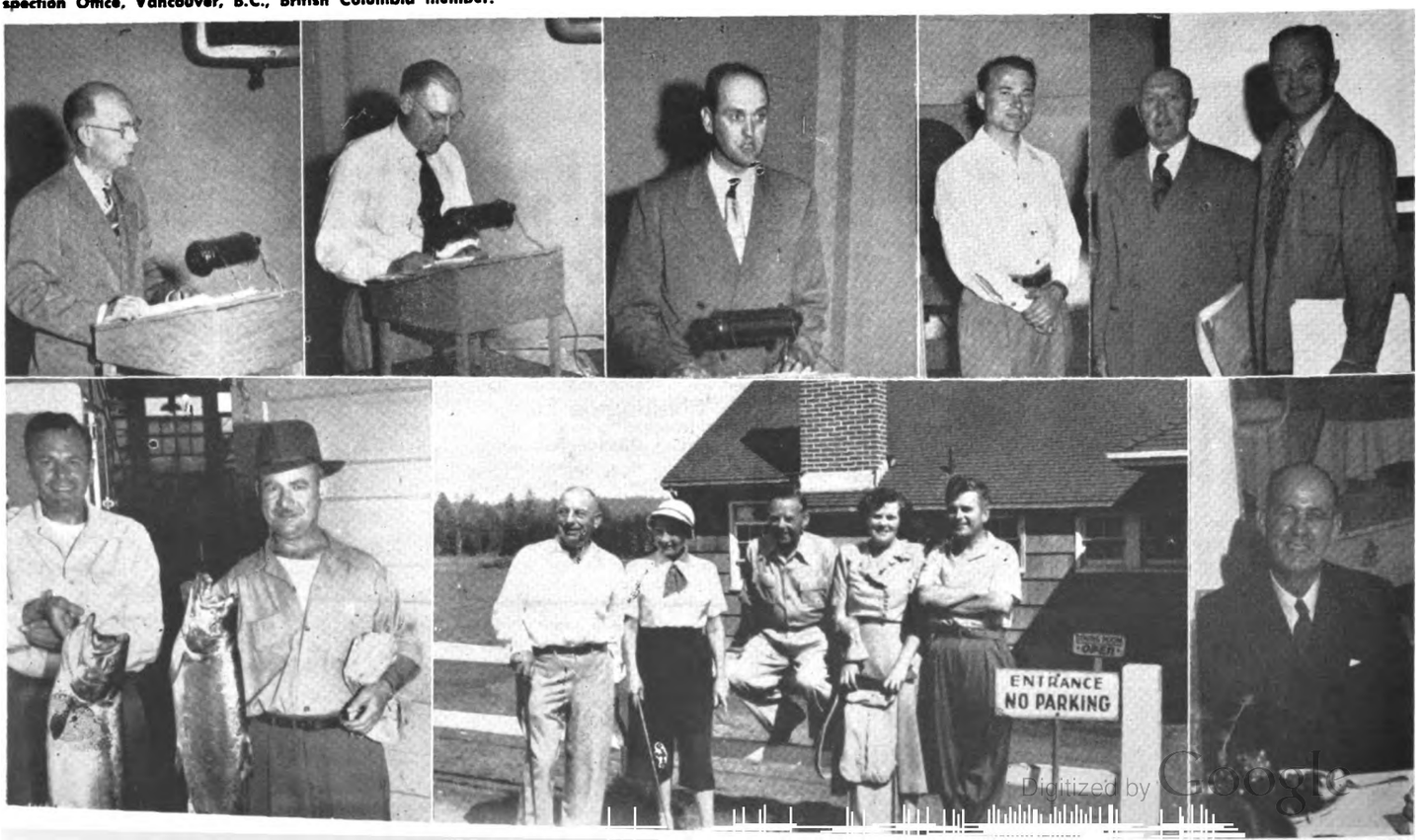
1. To foster the growth and advancement of the ports of British Columbia and to improve Canada's international trade relations.

2. To secure special publicity for the facilities of the British Columbia ports and to endeavor to create public interest in these ports.

3. To promote social intercourse and fellowship among its members.

PACIFIC NORTHWEST SECTION OF NAVAL ARCHITECTS HOLD ANNUAL MEETING. . . Top row left to right: Speakers—PAUL E. FORSYTHE, Western Gear Works, Seattle; L. S. BAIER, L. S. Baier and Associates, Portland; H. E. LOVEJOY, Puget Sound Freight Lines, Seattle. Committeemen: R. H. BARNES, Todd Shipyards, Secty-Treas.; H. C. HANSON, H. C. Hanson & Associates, Chairman; F. E. BLUMBERG, Fred G. Greaves Co., Papers Committee. Mr. Baier also was on the Papers Committee.

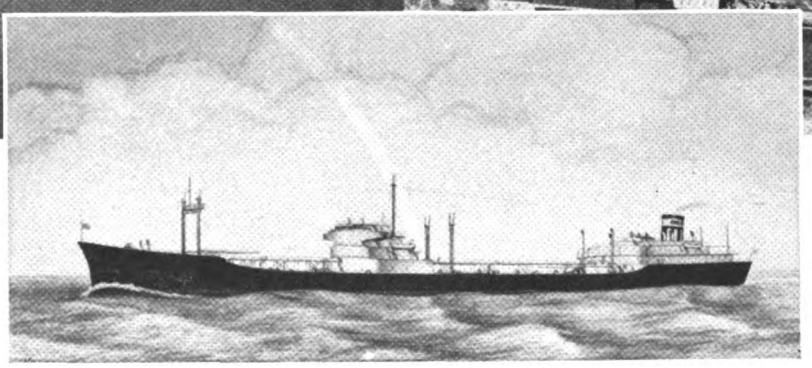
Bottom row left to right—Fishermen: J. L. GOODRICH, ARTHUR E. FARR, Todd Shipyards, Seattle. Golfers: L. C. HUSSA, Albina Engine and Machine Works, Portland; MRS. W. L. WILLIAMS; W. L. WILLIAMS, American Mail Line; MRS. G. J. ACKERMAN; G. J. ACKERMAN, American Mail Line. ALFRED J. SQUIRE, Steamship Inspection Office, Vancouver, B.C., British Columbia member.



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First of three tankers under construction for Philadelphia Tankers, Inc. with a capacity of 257,000 barrels, 660 ft. long and 30,000 d.w.t.



. . . AND EVERY YEAR *A Milestone*

The turn of the century and the founding of New York Ship marked the beginning of a revolution in ship construction methods. The company pioneered application of the mold loft template system to the fabrication of hull steel. Subassemblies of large steel sections, another milestone in ship construction, was adopted many years before World War II.

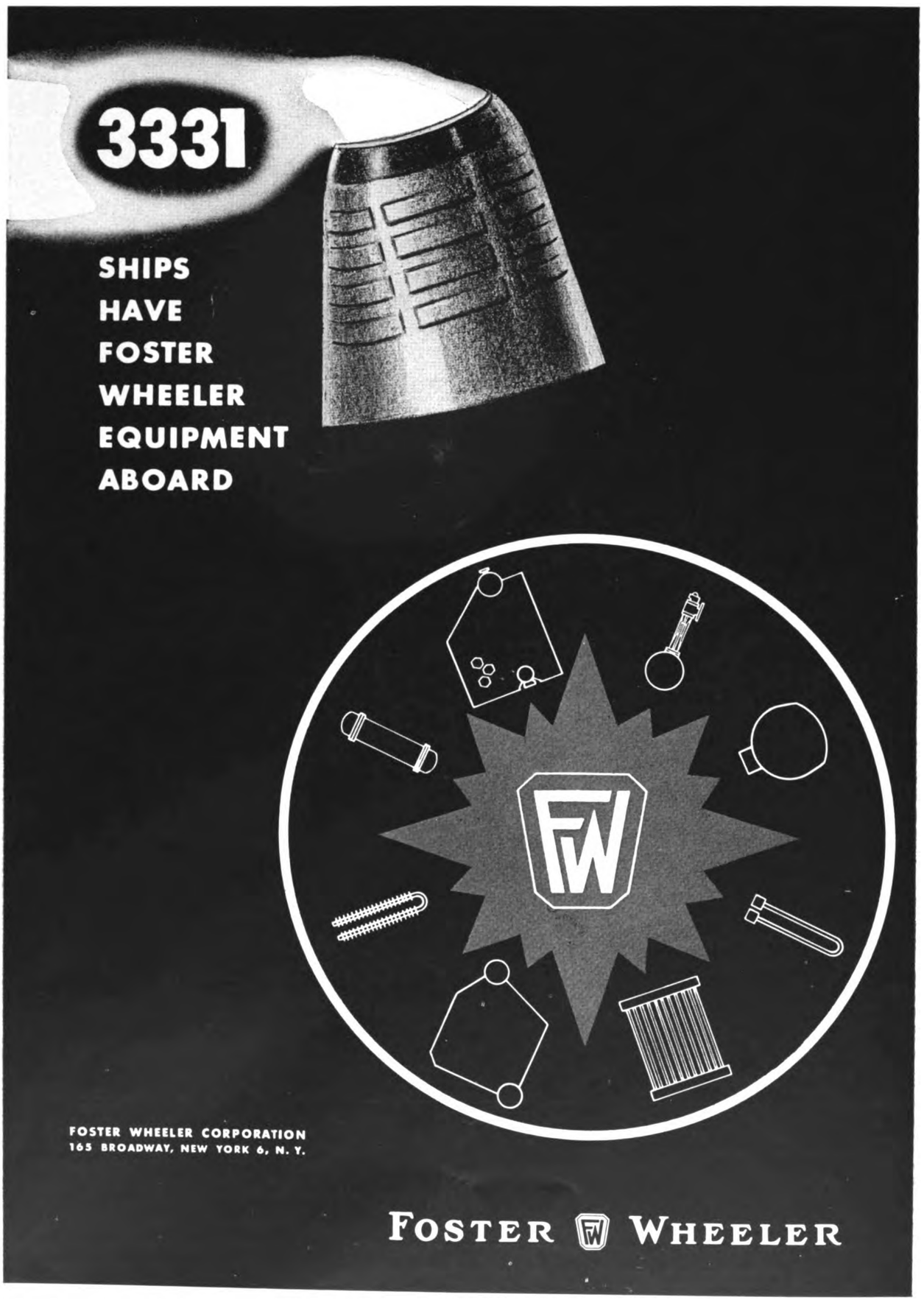
But New York Ship is not content with what has been accomplished in the past. Every year it has improved facilities and kept equipment up to date.

This consistent program of modernization has produced better ships . . . each ship a tribute to the foresight of the founders . . . each year a milestone in the long and successful history of the company.

NEW YORK SHIPBUILDING CORPORATION

CAMDEN, NEW JERSEY

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OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
Ship and Port Operations
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MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

October, 1949 Vol. 44, No. 11

Official Organ of The Society of Marine Port Engineers, New York, N.Y., Inc.; The Society of Port Engineers, San Francisco; The Society of Port Engineers, Los Angeles; The Society of Port Engineers Columbia River Area; The Society of Port Engineers of Puget Sound; the Port Stewards' Association of the Pacific Coast.

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Long Beach Plans New Terminal for Alexander Ships

Work has been started by the Board of Harbor Commissioners, Long Beach, on a new fill to provide large acreage adjacent to Berth 1-A at the outer end of Pier A in that port to be used as the southern terminal of the proposed Alexander Line's overnight trailership operation between Long Beach and San Francisco.

R. R. Shoemaker, chief harbor engineer at Long Beach, says it is planned for the terminal to provide a 600-foot berth for the two Alexander ships, the ss H. F. ALEXANDER and the RUTH ALEXANDER and so arranged they will be served by double-decked ramps enabling tractors to pull trailers and trucks between the ships and large parking lots immediately adjacent. The lots will accommodate upward of 300 trucks and trailers and more than 300 passenger cars.

Too, a modern three or four-story reinforced concrete building is planned at the Alexander terminal for the handling of passengers and for the general offices of the Pacific Coast Steamship Company, owners of the line. This will contain waiting rooms, baggage handling area, a cafe, ticket office, cold storage facilities, commissary, as well as the office accommodations.

"It seems probable that $2,000,000 will represent the approximate cost of the terminal building, and other features of the entire terminal will run well in excess of $1,000,000," Mr. Shoemaker says.

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NFAS Reports American Fleet Has Increased

For the second consecutive month the privately-owned American Merchant Fleet has increased in both number and tonnage, the National Federation of American Shipping reported in its monthly summary of the status of the Merchant Marine.

The Federation's report showed the privately-owned fleet of ocean-going vessels of 1,000 gross tons or over at 1,205 ships of over 14,200,000 DWT tons on September 1. The total consisted of 726 dry cargo and combination vessels of over 7.2 million DWT and 479 tankers of approximately 7.0 million DWT.

During August, the Federation reported, 5 liberty-type and 3 victory-type vessels were purchased from the USMC for U.S. flag operation. One liberty tanker was converted for dry cargo service and 1 U.S. owned foreign-built cargo vessel was sold to European owners. No new vessels were added to the privately-owned ocean-going fleet during August from new construction. Also included in the September 1 figures for the privately-owned fleet are approximately 150 freighters, combination and tanker vessels temporarily inactive.

On Bareboated vessels, the Federation reported a continuation of a sluggish freight market which resulted in a decline from 267 vessels under Bareboat on August 1 to a net of 227 vessels currently scheduled to continue in Bareboat operation.

The Federation report stated Government-owned vessels in the hands of general agents decreased from 20 to 13, all inactive, pending charter, layup or sale. Total vessels in the national defense reserve fleet, excluding tugs, cable ships and military auxiliaries, increased during August from 1,910 to 1,990.

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Canadian Government Awards Contracts for Shipbuilding

Contract for construction of a Canadian navy minesweeper as part of an $8,000,000 Canadian government shipbuilding program has been awarded to Victoria Machinery Depot, Victoria and Esquimalt, B. C.

Other government vessels being built in Canada under the new program are a $5,000,000 ice breaker, three coastal minesweepers and a trawler-type gate vessel. These will be built in eastern Canadian yards—Davie Shipbuilding & Repair Co., Lauzon, Que.; Saint John Dry Dock Co. and Port Arthur Shipbuilding Co.

Yarrows, Ltd., Esquimalt shipyard, subsidiary of Burrard Dry Dock, Ltd., is expecting to receive a contract for the construction of a naval escort vessel to represent a cost of about $1,000,000.

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Merchant Marine Library Assoc. Serviced 6,813 Ships Last Year

The activities of the American Merchant Marine Library Association were emphasized in its 27th annual report revealing that the 13 port offices of the association serviced 6,813 ships with 8,035 library units in 1948. The "Public Library of the High Seas" is the only National Library Service offering this type of service exclusively to the crews of vessels sailing under the American flag.

The shore library facilities of the association enable the men who sail the opportunity to borrow books for the duration of the ship's voyage. Land libraries do not permit this type of service, therefor, AMMLA meets a definite need in this respect.

The American Merchant Marine Library, located at 45 Broadway, New York 6, N. Y., is a non-profit organization, existing entirely on contributions and donations.

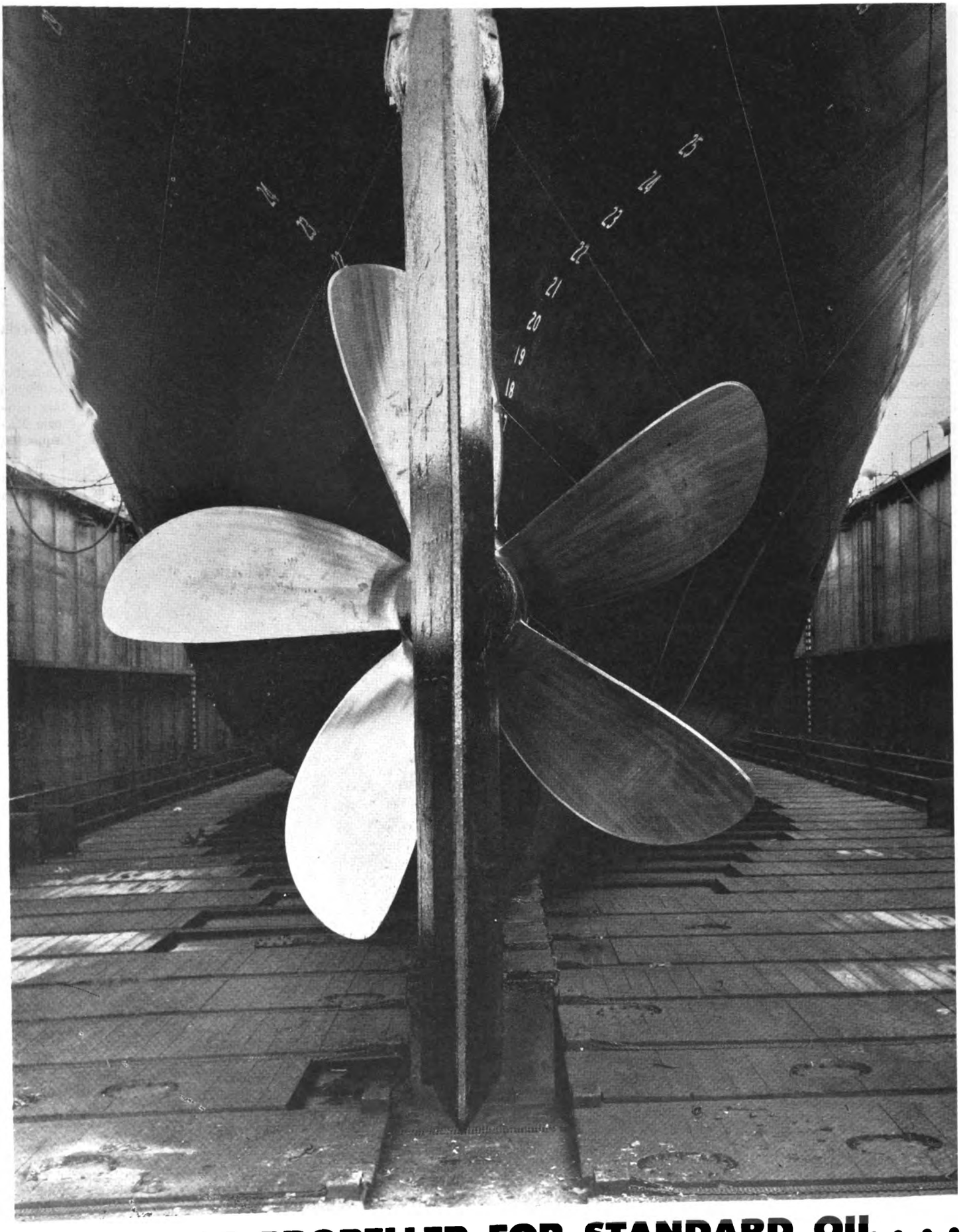
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Port of Houston Reports Upward Trend for July

The Port of Houston, after four small consecutive monthly drops in total tonnage figures, registered a 3.27 percent increase for July, according to a report released by General W. F. Heavey, general manager.

July's tonnage totaled 3,063,730, compared with 2,966,644 for the preceding month.

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18 TONS OF PROPELLER FOR STANDARD OIL . . .

Here's the first five-bladed wheel ever made on the Pacific Coast and the largest ever cast by Bethlehem's San Francisco shipyard. It was installed recently by Bethlehem on the Standard Oil of California's tanker, R. G. FOLLIS.

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MC EMERGES VICTOR IN THREE-CORNERED SUBSIDY BATTLE

GENERAL FLEMING PROVES AN ABLE CHAMPION OF THE BELEAGUERED MARITIME COMMISSION AND TURNS THE TIDE OF CONGRESSIONAL CASTIGATION

The Maritime Commission has received a powerful shot in the arm. With one dramatic sweep General Fleming has provided that in which the Commission has been sadly lacking, and that which should come most naturally to him—generalship.

We know of no Federal agency which has been so demoralized as the Maritime Commission has been for the past post-war years. A favorite whipping boy for Congress, industry, labor, and most recently the General Accounting Office, the Commission consistently rolled with the punches and let the blows fall where they might. At long last a *leader* has struck back, and the effect upon the staff of the Commission was the same as a knock-out punch delivered to the challenger.

The scene was a committee room of Congress. The occasion was the hearings on ill-considered charges of flagrant violation of the law leveled by the self-seeking Comptroller General. The relish with which the Congressional committee picked up the attack and pressed forward is all too reminiscent of recent witch hunts which have come to naught. The Maritime Commission fared badly. The subject—determination of foreign construction costs and national defense costs for subsidy differential purposes—was complicated to state it mildly. But the committee, under the chairmanship of Porter Hardy, Jr., (D) Va., gave no quarter. The manner in which the committee conducted the hearings should be subject to "investigation" as well as the methods and motives of the General Accounting Office.

The members of the Commission never had a chance for adequate explanation under the prosecuting tactics of the committee. To fully explain the matter of determination of foreign building costs is intricate, even on paper, but to verbally explain it under sharp and sometimes openly hostile cross-examination is nearly impossible. During the opening of the hearings the Maritime Commission admittedly did not put its best foot forward, but later recouped and backed up its determinations with supporting facts. Nevertheless, the attitude of the Commission staff was the same as it has been these past years—let Congressmen scream at will and only hope for the hearings to end.

It was at the close of the hearings that Chairman Porter Hardy, in a moment of contrition, suggested that General Fleming and the other commissioners might like to make a closing statement. General Fleming had a statement, all right. With just the right amount of reserve to preserve Congressional respect he proceeded to defend the Commission and turn the attack upon the Congressional Committee. For the first time the Maritime Commission had a real champion to strike back at a Congressional Committee which had approached viciousness in its baseless attacks. Members of the committee and the Commission alike were stunned at the turn of events which brought the hearings to a close. Perhaps it was a small thing, but it marks the turning point in the discouraging history of the Maritime Commission.

The politics involved in the three-cornered battle between the Commission, the General Accounting Office, and Congress were of a caliber more suited to Kansas City than the nation's capitol. Lindsay Warren, Comptroller General, received a report from his staff which had "audited" the commission's accounts, containing baseless charges and idiotic recommendations. The same day he received the report from his staff he turned it over to Congress with the comment, "I concur, without reservation, in the conclusions and recommendations of this report . . ." He charged that the Commission, in establishing construction differentials for the new American Export Liners, APL Liners, and U.S. Lines Superliner, had expended "not less than $25,000,000 (which) must be considered as excessive due to various irregular procedures, inaccurate calculations, and unjustifiably liberal interpretations of statutory language."

Political self-aggrandizement was the only possible explanation of such a hasty move. The General Accounting Office has been aware for some time that the Commission was granting over the one-third differential but has never made any comments to the Commission. The Comptroller General deliberately set out to accumulate possible evidence against the Commission with which he could woo Congress. He has done this before with other agencies. But this time he wooed too ardently and got his face slapped. President Truman even took the trouble to personally call old-time-pal General Fleming and congratulate him on his able reply to the Comptroller General, which puts Mr. Warren in the political doghouse.

Further evidence of improvement in the internal affairs of the Commission, which will without doubt considerably affect the external affairs, is to be found in General Fleming's statement to the entire staff on the occasion of Reorganization Plan No. 6 going into effect. He left little doubt but that he will assume all of the authority and responsibility now vested in him and will require the same for others on his staff.

The General hit at one of the weakest spots in his organization. Numerous times in the editorial columns of The LOG we have referred to the "leaks" in the Commission by which various self-seeking groups obtain information which they have no right to possess, and the demoralizing effect of the various "cliques" within the Commission. General Fleming, in his statement to his entire staff, gave fair warning on this score and can be expected to follow it up if the situation does not rectify itself. His remarks were as follows:

"I expect loyalty to the agency from everyone in it. We should have loyalty all up and down the line. The staff members expect the Commission to back them up—the Commission has a right to ex-

GENERAL PHILIP B. FLEMING . . . "with one dramatic sweep he has provided that in which the Commission has been sadly lacking . . . generalship."



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pect the staff to back it up. You are responsible for good administration, and I shall back you up.

"I am informing the Commissioners that for the present all requests, other than those which can be readily answered with material or information already on hand, will be channelled through my office on the way from the Commissioners to the staff. Only in this way can I obtain a real picture of the amount of work involved in complying with such requests.

"The maritime industry, or at least that part of it stationed in Washington, adds up to a pretty small community. By and large everyone in it knows everyone else. My suggestion is that everyone on the Commission staff ought to keep in mind the 'goldfish bowl' aspect of our work and conduct themselves accordingly.

"If I am responsible to the Congress for the executive and administrative operations of the Maritime Commission, I will have to know what information the Congress is seeking from the Commission and what information is going from the Commission to the Congress, to committees and subcommittees, and individual Congressmen, from the staff. Only in this way can I be fully informed of Congressional thinking on the problems of the agency.

"My few words at the close of the hearings before Chairman Hardy's subcommittee the other evening dealt solely with the manner in which the investigation had been conducted. I did not intend any disrespect to Congress. I have been appearing before Congressional Committees since 1923 with pretty fair regularity. The Congressmen, whether we like it or not, are our bosses and we are responsible to them. I want this attitude to be reflected in all of the actions of the staff of the Maritime Commission, and I want the men on the Hill to get all the information to which they are entitled, but I want to know what they are getting."

We think General Fleming's statement serves as a warning to everyone that in the future they cannot use the Maritime Commission as a submissive vehicle for wild statements and charges which serve only to beget bold headlines. He hope the Maritime Commission has fully embarked on a new era.

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GAO: "ILLEGAL PRACTICES & INACCURATE CALCULATIONS"

The hasty and ill-considered charges of the Comptroller General of the United States, Lindsay C. Warren, were forwarded to Congress the same day he received them from his "auditing" staff, taking it upon himself to direct the policy of the Maritime Commission. Pertinent extracts from his charges are as follows:

On August 9, 1948, the Commission approved the application of American Export Lines, Inc., for two large passenger vessels to be constructed under title V of the Merchant Marine Act, 1936, authorizing construction-differential subsidies. On August 11, 1948, it approved the application for the construction of three combination passenger and cargo vessels for American President Lines, Ltd., and on April 7, 1949, approved the building of a large trans-Atlantic passenger vessel for United States Lines Company under title V. The estimated cost of the vessels, before providing for possible changes and escalation adjustments, and the amount of the cost to be borne by the respective parties, are shown in the following summary:

	American Export Lines	American President Lines	United States Lines	Total
Commission's share:				
Subsidy	$19,564,830	$13,838,700	$18,225,270	$51,628,800
National-defense features	3,352,600	600,000	24,060,514	28,013,114
	22,917,430	14,438,700	42,285,784	79,641,914
Applicant's (buyer's) share:				
Commercial vessel	23,912,570	17,574,300	26,749,730	68,236,600
National-defense features			1,337,486	1,337,486
	23,912,570	17,574,300	28,087,216	69,574,086
Total	$46,830,000	$32,013,000	$70,373,000	$149,216,000

In a report dated January 3, 1947, presented by Mr. Bland, from the House Committee on the Merchant Marine and Fisheries (H. Rept. 2, 80th Cong., 1st sess.) the U. S. Maritime Commission was reminded that:

> ". . . Congress has determined what assistance is necessary to enable operators of American-flag vessels to compete with lower cost foreign operators. It is the responsibility of the Maritime Commission to effectuate this congressional policy and to give all of the assistance to American operators specified by Congress. But the Maritime Commission is not authorized to provide more aid or assistance to the American Merchant Marine than Congress has prescribed."

This admonition by the Congress has been ignored by the U. S. Maritime Commission in its determination of allowances for construction-differential subsidies and national-defense features. The Commission has authorized construction subsidies in excess of 33-1/3 percent on evidence which in our opinion falls far short of the standard of "convincing evidence" required by the Merchant Marine Act, 1936, and without the Commission itself, as the body intended by the act to be convinced, having considered the evidence available. Furthermore, it has utilized its authority to pay the entire cost of national-defense features as a vehicle for paying subsidies in excess of those authorized by the act.

The amount by which the sums granted by the Commission under the designation of subsidies exceed the maximum permitted by the act without "convincing evidence" that the differential in United States and foreign costs is greater than 33-1/3 percent, is shown in the following tabulation:

	Subsidy granted	Subsidy at 33-1/3 percent	Excess
American Export	$19,564,830	$14,492,467	$ 5,072,363
APL	13,838,700	10,471,100	3,367,700
U. S. Lines	18,225,270	14,991,667	3,233,603
Total	$51,628,800	$39,955,134	$11,673,666

It is not possible to determine precisely the excess allowance for the so-called national-defense features because the available evidence does not disclose which of the features may have been properly classified as such. It is evident, however, that most of these features were requested by the applicants for commercial use and, accordingly, should have been considered as part of the cost of the vessel in the computation of the subsidy rather than paid for as national-defense features.

Convincing Evidence

The Commission has approved subsidies in excess of 33-1/3 percent in the case of all three agreements discussed in this report. The act prohibits the Commission from granting subsidies in excess of 33-1/3 percent except in cases where the Commission possesses "convincing evidence" that the difference between the foreign and domestic cost is in excess of 33-1/3 percent. Actually, not only was no such evidence presented to the Commission as a body in the cases discussed in this report, but it was not even in the possession of the staff of the Commission making the recommendations.

The Commission does not now require the presentation to it or the inclusion in the record of the evidence supporting the subsidies recommended by its staff. Rather, it bases its determinations solely upon the recommendations of its staff which are supported in most cases only by abbreviated explanations of the method followed in arriving at the final result. In other words, the record acted upon by the Commission is wholly devoid of the evidence which the law seems to contemplate should be examined, considered, and weighed by the Commission acting as an administrative tribunal. The Commission is following this practice despite an opinion in 1938 by its then General Counsel that mere recommendations by the staff could not legally form the basis of the determinations required of the Commission.

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ONE OF THREE SHIPS now under construction by New York Shipbuilding Corp., Camden, N. J., is this new round-the-world superliner for American President Lines.

The disregard by the Commission for its responsibility to consider the evidence before making its determinations was demonstrated at a special Commission meeting held on August 10, 1948, to consider the subsidy requested by American Export Lines, Inc. At this meeting the Commission considered a motion by one of the Commissioners that "the Research Division and Technical Bureau be instructed to prepare a revised recommendation to the Commission, explaining in detail how their respective differentials of 44.74 and 45.07 percent, included in their memorandum of August 9, 1948, was determined with respect to the two passenger vessels for Export." The motion was withdrawn after it was pointed out that the Commission had approved the 45 percent subsidy for American Export Lines, Inc., on the previous day.

An exchange of telegrams between the Chairman and one of the other Commissioners relative to the determination of the American Export Lines' subsidy also would seem to be pertinent in this connection. The telegram from the Chairman dated August 5, 1948, read as follows:

> "Please arrange to return to Washington for Commission meeting ten a.m. August ninth to consider evidence for determination of construction-differential subsidy for two Amercian Export Line Passenger vessels, which matter requires four affirmative votes since indicated subsidy, if approved, will exceed thirty-three and one-third percentum."

The reply, dispatched from Portland, Oregon, on August 7, 1948, was:

> "It is my opinion and I do find as a fact that the Commission possesses convincing evidence that the actual differential between the domestic and foreign construction cost of passenger-type vessels is greater than 33-1/3 percent and at least equal to or greater than 50 percent. If necessary wire to me the evidence presented by the staff of the Commission so that I may comment with respect to each relevant factor and add thereto any additional factors which convinced me."

The subsidy calculations were made by the staff primarily on the basis of fragments of information supplied by the Commission's foreign representatives and foreign publications. Moreover, in interpreting this information and filling in the gaps, the Commission's staff made a large number of assumptions without foundation and its calculations were replete with errors and inconsistencies. The assumptions, errors, and inconsistencies are discussed in considerable detail in the later sections of this report dealing separately with the three subsidy agreements. Some of these are:

1. A combined profit and overhead rate of 6 percent was used in the calculation of foreign costs. Reference to the source of this rate shows that it it was an estimate of profit only. Obviously, overhead alone would be several times that figure. (See p. 18.)
2. Rates of 2½ percent in one case and 5 percent in another were used to increase the cost of a vessel built to foreign standards to that of one built to American standards. When it was decided to reduce the cost to foreign standards, a rate of 8½ percent was used. (See p. 15.)
3. Our review of one of the calculations of foreign costs revealed that it was based on a mathematically unsound premise. The Commission's staff agreed that the calculation was worthless. (See p. 20.)
4. A basic assumption that foreign and domestic material costs were equal was made without any basis whatever. Actually the only data available, which covered one of the largest items of material costs, indicated that the foreign costs were 60 percent above domestic. (See p. 17.)
5. The machinery and equipment costs were assumed to be divided equally between labor and materials. There was no evidence presented to support this assumption. (See p. 16.)
6. An error of approximately $1,500,000 was made as a result of using shipyard bids which were not comparable. (See p. 33.)
7. An estimate of an increase in foreign costs was made at 10 percent, whereas the evidence, including a definite and pointed statement by the foreign representative, indicated the increase was about 20 percent. (See p. 34.)

The mistakes listed above, together with those presented in the later discussions, completely discredit the subsidy calculations and the conclusion is inescapable that neither the Commission nor its staff possess evidence to support the granting of a subsidy in excess of 33-1/3 percent. If this view needs any further support, it is amply supplied by the comments of the State Department's Adviser on Shipping for Northern Europe with respect to the 45 percent subsidy granted to American Export Lines. In a memorandum dated September 3, 1948, quoted in full beginning on page 24, he stated flatly that "No information secured by the Embassy or by the Maritime Commission's research representatives here will substantiate a differential of 45 percent" and went on to point out that the subsidy should be no more than 33 percent.

RECOMMENDATIONS

The recommendations which follow are segregated between those addressed to the Congress and those addressed to the United States Maritime Commission. Implementation of the recommendations to the Congress will require amendment of the Merchant Marine Act, 1936, while those addressed to the Commission are made in the light of existing statutes, and can be accomplished by Commission action. We believe that both the necessity for and desirability of these recommendations is demonstrated by the data presented in this report.

Recommendations to the Congress

1. That the U. S. Maritime Commission be required to hold open hearings on proposed construction-differential subsidy contracts at which all of the evidence upon which Commission determinations are based must be presented and interested parties heard, and to publish the hearings and findings.

2. That the cost of features incorporated for national-defense uses be required to be paid from Navy Department appropriations so that the desirability of adding those features may be considered in the light of overall naval and military requirements and funds available to meet those requirements.

3. That the cost of features incorporated for national defense uses be permitted to be paid by the Government only if and to the extent that such features do not have commercial utility, or if and to the extent that their cost is disproportionate to their value for commercial purposes.

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4. That sections 502(a) and 502(b) of the act be clarified to avoid the necessity for administrative interpretations as to: (a) whether items not included in the shipbuilder's bid such as architect's fees, inspection fees, and hotel equipment should be subsidized, (b) the sharing of escalation of material and labor costs, and (c) the sharing of design and inspection costs incurred by the Commission.

Recommendations to the USMC

1. That the Commission take such action as may now be available to prevent the payment of the excess subsidies and national defense allowances discussed in this report.

2. That the Commission adopt a body of policy governing the determination of construction differential subsidies and require that it be adhered to.

3. That the Commission send the plans and specifications and detailed United States shipyard estimates of vessels proposed to be subsidized to its foreign representatives for the determination of foreign costs and that it require the foreign representatives to present to the Commission their estimates together with all supporting evidence.

4. That the Commission require a thorough review by the audit staff of each subsidy calculation and a report thereon before the Commission makes its findings.

5. That the Commission hold open hearings on proposed construction differential subsidy contracts at which all of the evidence upon which Commission determinations are based must be presented and interested parties heard, and that it publish the hearings and findings.

6. That the Commission discontinue the present illegal practice of increasing subsidies by the amount representing the presumed difference in cost between foreign and American standards.

7. That before consideration is given to national-defense features the Commission follow the procedures contemplated by section 501 of the act and (a) require each applicant to submit the plans and specifications of the vessel he requires for commercial use, (b) determine that such plans and specifications as submitted or modified provide for a vessel of modern and economical design which will meet the needs of the route, line, or service and the requirements of commerce, and (c) submit such plans and specifications to the Navy Department for approval or suggested modification.

8. That the Commission adhere to its policy adopted in June 1948 of paying for national defense features only "if and to the extent that such features do not have commercial utility, or if and to the extent that their cost is disproportionate to their value for commercial purposes."

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MC: "THE COMPTROLLER GENERAL IS IN ERROR"

Commissioner Grenville Mellen, who was Acting Chairman of the Maritime Commission at the time it acted upon the construction-differential subsidies which the General Accounting Office attacked, presented an able answer to Mr. Warren's charges, making the office of Comptroller General look slightly silly. Extracts from Mr. Mellen's reply are as follows:

The Comptroller General is in error, when he states in his letter of July 11, 1949, that not less than $25,000,000 of the approximately $80,000,000 construction-differential subsidy determinations and national defense allowances in connection with these vessels must be considered as excessive. The construction-differential subsidy determinations and national defense allowances approved by the Maritime Commission in connection with these six vessels are not excessive.

The Comptroller General's statement in his letter of July 11, 1949, is based upon the conclusions of members of his staff set out in their special report to the Comptroller General, also dated July 11, 1949. It must be kept in mind that the charges and criticisms of the Commission's construction-differential subsidy and national defense determinations are not charges and criticisms of the Commission's accounting practices in connection with these matters but are charges and criticisms by the audit staff of the Comptroller General of engineering and cost estimating determinations of the Maritime Commission.

The three construction-differential subsidy agreements between the Maritime Commission and the American President Lines, Ltd., American Export Lines, Inc., and the United States Lines Company, respectively, made the subject of the special report, involve the sale of six large passenger vessels under the provisions of Section 501 and Section 502 of the Act, with the respective sales prices to the purchasers reduced by the construction-differential subsidies and national defense allowances as authorized by those Sections of the Act.

The purpose of Congress in authorizing the Maritime Commission to make such construction-differential subsidy determinations was stated by the House of Representatives Merchant Marine and Fisheries Committee (Report No. 824, 76th Congress, 1st Session) as follows:

"The object of the Merchant Marine Act is to put our operators on a comparable basis with foreign operators. Any foreign operator, unless restricted by national policy, in which he receives concessions by his own government, has available to him a world-wide building market."



"THE COMPTROLLER GENERAL IS IN ERROR . . . ," COMMISSIONER GRENVILLE MELLON, presented an able answer to Mr. Warren's charges.

National Defense Features

The Comptroller General insists that no approval of national defense "features incorporated in the vessel for national defense uses," the cost of which is paid by the Commission in addition to the subsidy, can be given unless the applicant first submits to the Commission plans and specifications for a commercial vessel, and then ". . . if the Navy Department finds that the proposed commercial vessel is not suitable . . . and only then is it proper for features to be incorporated for national defense uses at the expense of the United States Maritime Commission."

The Comptroller General's construction of the provisions of the Act relating to features incorporated in the vessel for national defense uses is incorrect, and the procedure proposed by him has not been followed by the Maritime Commission. The Comptroller General is in error in attempting to apply his restrictive construction to the Act as to the procedure permitted for the determination of national defense features under the provisions of Sections 501 and 502.

The language of Sections 501 and 502 and other provisions of the Act, including Sections 101, 210, 212, 504 and 509, makes clear the authority of the Maritime Commission to approve and pay for features incorporated in the vessel for national defense uses which are included in the applicant's plans and specifications. Section 210, in describing the objectives of a long range program for the replacement of and additions to the American merchant marine, includes as one objective the following:

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". . . In planning the development of such a fleet the Commission is directed to cooperate closely with the Navy Department as to national-defense needs and the possible speedy adaptation of the merchant fleet to national-defense requirements." (Second sentence of subdivision First.)

Section 212 authorizes and directs the Maritime Commission:

"(b) To study and cooperate with vessel owners in devising means by which . . . (2) there may be constructed by or with the aid of the United States express-liner or super-liner vessels comparable with those of other nations, especially with a view to their use in national emergency, and the use in connection with or in lieu of such vessels of trans-oceanic aircraft service, . . . "

The Commission is not limited to the consideration of features for national defense uses only where they are added to the plans and specifications at the suggestion of the Navy Department made after the plans and specifications have been submitted to the Secretary of the Navy for his approval. The purpose of referring the vessel plans and specifications to the Navy Department is to assure the construction of a commercial vessel with commercial features which will be ". . . suitable for economical and speedy conversion into a naval or military auxiliary, or otherwise suitable for the use of the United States Government in time of war or national emergency." Many details of the vessel may be subject to Navy modifications or suggestions which do not adversely affect commercial operations or add materially to the cost of such commercial vessel. These are required by the Commission but the full cost thereof is not absorbed by the United States. As will be shown later in this statement, many instances of this treatment exist in the case of these six vessels.

Modern war, as our experience in the last war has shown, requires a large number of vessels for the carriage of troops, for the carriage of military and other cargo, and for use as naval or military auxiliaries. There can be incorporated in a commercial vessel features which will have little or no commercial value in the commercial operation of the vessel and may, in fact, be a commercial detriment, but which will greatly increase the speed and the economy of converting the vessel to naval or military use. Such features are features for national defense uses which the Act provides shall be paid for by the Commission.

National defense requirements for any anticipated future emergency call for a large number of vessels which can be converted to troop carriers with as little conversion delay and expense as possible.

In view of these circumstances, the present-day applicant for the construction of a large passenger liner knows that such vessel is suitable for a troop carrier, and that the Navy Department will require that there be incorporated in the vessel features which will greatly increase the speed and economy of conversion to national defense uses but which will have little or no commercial value. It is therefore prudent and proper that an applicant in preparing the design of a new passenger vessel should consult with representatives of the Navy Department in such preparation so that the plans and specifications as presented by the applicant will include the features for national defense uses. Such a procedure is permitted by the Act.

The Comptroller General's restrictive construction of the Act would require the applicant to first present the plans and specifications of a passenger liner (without features for national defense uses) which the applicant knows the Navy Department will not approve, so that the Navy Department may then suggest the features for national defense uses and new plans and specifications may be prepared. There is no practical justification for such a costly and time-consuming procedure which would be prejudicial to the interests of the Government.

Under the above Sections, the Commission is authorized to pay for such national defense features in addition to the construction-differential subsidy whether the feature is included in the plans and specifications submitted by the applicant in his original application or is later added by the Navy Department, when such a feature is certified by the Secretary of the Navy as a national defense feature of sufficient importance and value to justify the cost to be paid by the Commission as a national defense feature. The Maritime Commission, however, has adopted the policy of paying for such national defense features in addition to the construction-differential subsidy only, if, and to the extent that, such features do not have a commercial value or if, and to the extent that, their cost is disproportionate to their value for commercial purposes.

As will be demonstrated subsequently in commenting upon the Comptroller General's criticism of the features included in the national defense allowances in connection with the six vessels under discussion, the allowances are for features for national defense uses as approved by the Navy Department and are features which either have no commercial value, or their cost is disproportionate to their commercial value.

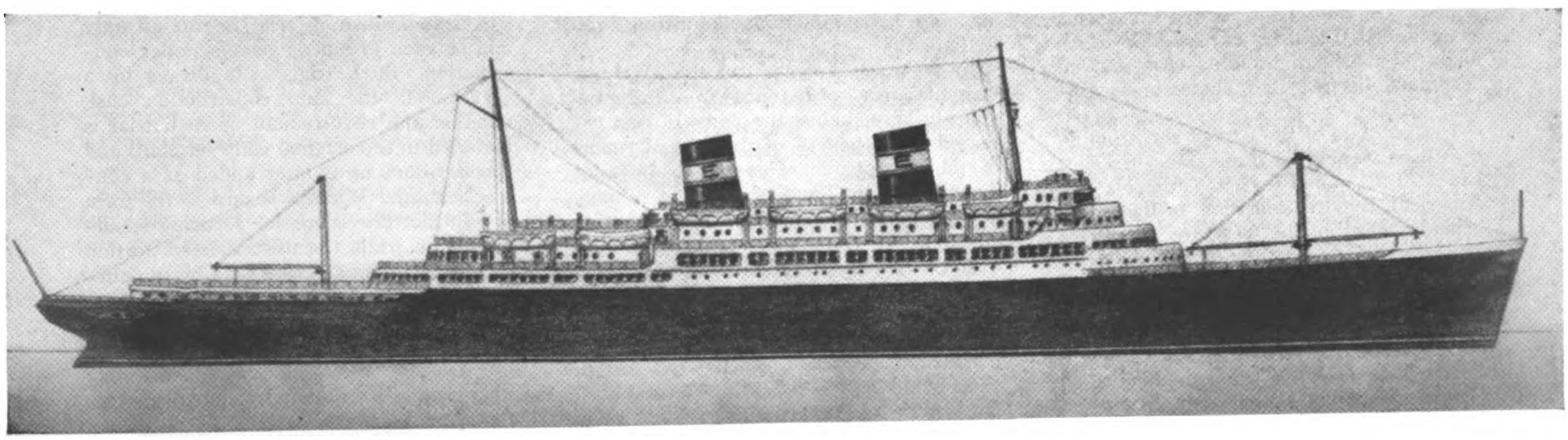
Similar Plans and Specifications

The Merchant Marine Act, 1936, as amended, permits the Maritime Commission to adjust its estimate of the cost of constructing a proposed vessel in a foreign shipbuilding center to take into account the foreign standards which would be used in a similar foreign-built vessel of a foreign competitor. The Comptroller General is in error when he states that such adjustments have been ". . . employed solely to increase the subsidy by the United States on these vessels."

Section 502(b) of the Act enacted in 1936 provided that the construction-differential subsidy may equal but not exceed the excess of the bid of the domestic shipyard over the estimated cost of the proposed vessel if it were constructed "under *like* plans and specifications" in the foreign shipbuilding center (emphasis added). By the Act of June 23, 1938, (52 Stat. 953) this provision was amended to substitute the word "similar" for the word "like."

The proposed amendments of Section 502 in 1939 and 1948 referred to by the Comptroller General would have authorized the payment of the cost of the difference in American and foreign standards in these cases where the plans and specifications under the referred-to opinion of

ARTIST'S SKETCH for the new American Export Line's two large high speed passenger cargo vessels for Mediterranean service, now under construction by Bethlehem Steel Company's Shipbuilding Division, Quincy, Mass. yard.



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the General Counsel would not have been "similar." The payment for the high American standards in those cases where the plans and specifications are not similar would concededly require an amendment of Section 502 of the Act.

In making allowances for the higher American specifications in connection with the determinations of the estimated foreign building cost of the vessels under discussion, the Maritime Commission's determinations were upon the basis of "similar plans and specifications" as defined in General Counsel's opinion of July 16, 1948, and such determinations are authorized by the existing provisions of the Act.

Escalation

As has been stated above, under the provisions of Section 501 and 502 of the Merchant Marine Act, 1936, as amended, the sales price of a vessel to the applicant is a price corresponding to the estimated cost, as determined by the Commission, of building a vessel to similar plans and specifications in a foreign shipbuilding center, excluding the cost features for national defense uses incorporated in the vessel, the cost of which is paid by the Commission.

Since the sales price is an estimated cost of building in a foreign shipyard, such estimated foreign cost is not affected by the fact that the vessel construction contract price for the construction of the vessel in an American shipyard is subject to increase or decrease for increases and decreases in American material and labor price levels during the construction period. The vessel sales price is, however, subject to the provision of Section 502 of the Act, namely, that the construction-differential subsidy shall not exceed 50 percent of the cost (exclusive of the cost of national defense features) of constructing the vessel in an American shipyard.

The estimating of the foreign construction cost of a vessel is very difficult under the most favorable conditions, and, where the foreign costs are unstable, an estimate of the cost of construction in a foreign shipyard is even more difficult.

Where foreign prices are unstable, or where they are stable but by reason of a state-controlled economy, prices can be arbitrarily changed by governmental action, it is extremely unlikely that direct evidence of fixed bid prices can be obtained. The Merchant Marine Act, 1936, as amended, requires an estimate to be made of a foreign building cost, and an "estimate" necessarily includes uncertainties.

The estimate of the cost of constructing the three vessels for American President Lines, Ltd., and the two vessels for American Export Lines, Inc. in the Netherlands was on the basis of the price levels in that country as of the period of the estimate. It was conceded that due to the price trends prevailing at that time, a shipyard in the Netherlands would not contract upon a fixed-price basis. It will be recalled the price trend in the United States and in the Netherlands, in August 1948, appeared to be generally upward. At the time these estimates were made, it was believed that the sales prices of the vessels, that is the estimates of the foreign cost of building these vessels, could be best adjusted for price increases by providing for an increase or decrease in the sales price of the vessels by an amount proportionate to the unsubsidized portion of the increase or decrease in the contract prices of the American ship construction contracts for these vessels by reason of adjustments provided in those contracts for changes in American labor and material prices indices during the building periods.

Early in the year 1949, when determinations were made of the cost of constructing the vessel (exclusive of national defense features) for the United States Lines in Great Britain, the downward trend in American prices was apparent. It was also evident that while shipbuilding costs in Great Britain were subject to some further rise for a short period, British shipbuilding costs were levelling off and over the long building period of this vessel, would come down. With the economy of the British Isles dependent upon a large volume of exports, a reduction in British prices to meet lower competitive world prices may be expected to take place, and it is probable that this reduction in British prices will be effected in the near future by currency devaluation or by other measures. These factors were taken into consideration by the Maritime Commission in determining the sales price of the vessel.

In view of these circumstances, it appears that the Maritime Commission's decision to peg the sales price of the vessel was reasonable and proper.

Items Not Covered by Shipyard Bid

The language of Section 502(b) of the Merchant Marine Act, 1936, as amended, provides that the "construction-differential subsidy" is the amount of the reduction in the selling price of the vessel which may equal, but not exceed, the . . . excess of the bid of the shipbuilder constructing the proposed vessel, exclusive of the cost of the national defense features . . . over the fair and reasonable estimates of cost . . . of the construction of the proposed vessel if it were constructed under similar plans and specifications (excluding the national defense features) in the foreign shipbuilding center. Section 905(d) of the Act defines the word "construction" as including "outfitting and equipping."

In the case of certain of the Maritime Commission's construction-differential subsidy agreements, the items of cost referred to on page 1 of the special report of the Comptroller General as "interior decorator's fees," and "the cost of supplying items not included in the construction contract but which may be furnished separately by the Commission or purchased by the applicant with the prior approval of the Commission," have been included in the plans and specifications of the ship construction contract, so that the cost of these items was included in the total contract price of constructing the vessel in the American shipyard upon which a construction-differential subsidy was granted. Those items of cost, therefore, received the same percentage subsidy as was allowed upon the entire shipyard construction cost.

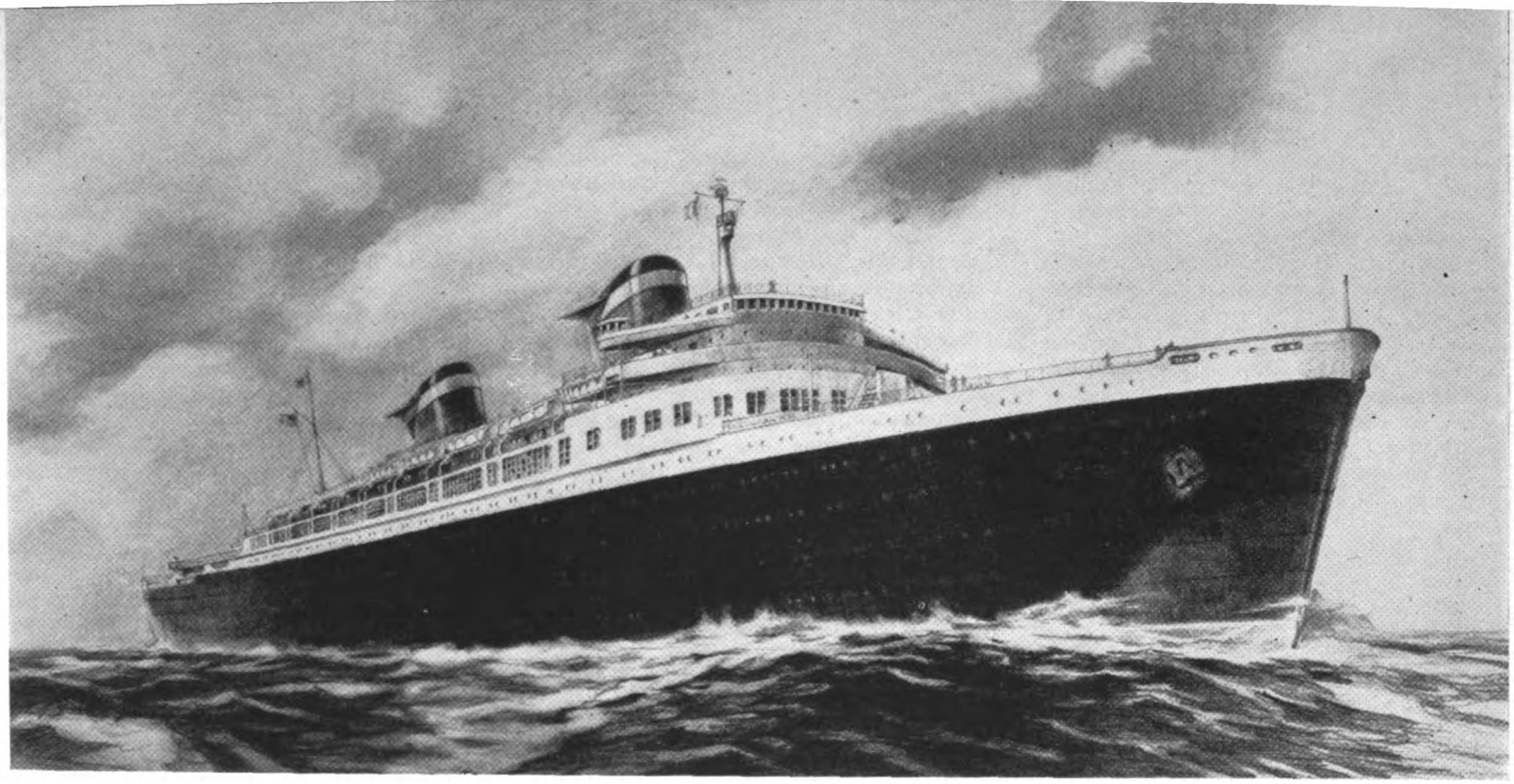
In the case of other construction-differential subsidy agreements of the Maritime Commission, these items of cost required for a completed vessel have not been included in the contract plans and specifications, but have either been furnished to the vessel by the Maritime Commission or by the applicant, subject to the approval of the Maritime Commission. A closer and more skilled supervision over the acquisition for the vessel of items of furniture and furnishings is assured when these are purchased by the Maritime Commission or by the applicant, rather than by the shipyard, and the Maritime Commission has found that this procedure which is permitted by the Act secures, in the case of a large passenger vessel, a more satisfactory vessel, and it does not increase the cost of constructing the vessel.

An additional item of cost referred to by the Comptroller General (on page 12 of the Special Report) is the item of "fees" for preparation of bidding plans and specifications" and "cost of inspection during construction." These are items of cost which are necessarily incurred in the construction of a vessel and are not items of cost which can be included in the shipbuilding contract. These are items of cost, however, the greater part of which the Maritime Commission, as the owner of a vessel under construction (which vessel is to be sold by the Maritime Commission to a purchaser under a construction-differential subsidy agreement) could incur for its own account as administrative costs of the Maritime Commission.

Although there is no requirement in the Merchant Marine Act, 1936, as amended for the addition to the sales price of the vessel of any part of the administrative costs incurred by the Maritime Commission in connection with the construction of the vessel, the Maritime Commission by authorizing applicant, subject to Maritime Commission approval, to incur these costs has required the applicant to pay as a part of the vessel sales price the same proportion of these costs as the sales price of the vessel bears to the total vessel construction costs.

A standardization trial is run on only one of each group of vessels under construction. Such trials will always be a cost under the ship construction cost, whether the requirement of such trial is included in the original contract plans and specifications or is later added as a contract change. Without regard to the form of contract provisions for securing standardization trials the unsubsidized portion of this cost is in all cases paid by the purchaser or purchasers of the vessels covered by such trials. There is nothing improper in the Commission's treatment of the increase in vessel costs due to running standardization trials as alleged in the special report.

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NEWPORT NEWS SHIPBUILDING AND DRY DOCK CO. will build this United States Lines' superliner for North Atlantic service, accommodating 2,000 passengers and requiring a crew of 1,000.

Convincing Evidence

The Comptroller General has charged that the Maritime Commission did not possess "convincing evidence" to support a finding that the subsidy exceeded 33-1/3 percent. In substance, he states:

> "Actually, not only was no such evidence presented to the Commission as a body in the cases discussed in this report, but it was not even in the possession of the staff of the Commission making the recommendations.
>
> "* * * the record acted upon by the Commission is wholly devoid of the evidence which the law seems to contemplate should be examined, considered, and weighed by the Commission acting as an administrative tribunal."

These charges are without foundation.

As stated in the opinion of the General Counsel dated July 19, 1938, quoted in part by the Comptroller General, "convincing evidence" means—

> "evidence sufficiently strong to lead four members of the Commission to the belief and conviction that the construction-differential subsidy actually exceeds 33-1/3 percent.

The Comptroller General omitted, however, from his extensive quotation from the opinion of the General Counsel, the very heart of the opinion—

> "The *sufficiency* of the evidence is not open to question but the existence of *some evidence* is essential." (Exhibit A.)

Section 502(b) of the Merchant Marine Act, 1936, as amended, provides in pertinent part as follows:

> "* * * The construction-differential approved by the Commission shall not exceed 33-1/3 per centum of the construction of the vessel paid by the Commission (excluding the cost of national-defense features as above provided), except that the actual differential is greater than that percentage, the Commission may approve an allowance not to exceed 50 per centum of such cost, upon the affirmative vote of four members * * *"

Section 502 originally required that the Maritime Commission possess ". . . conclusive evidence . . ." to approve a construction-differential subsidy in excess of 33-1/3 percent. By the Act of June 23, 1938 (52 Stat. 953) "conclusive evidence" was changed to "convincing evidence." In connection with that amendment, Mr. Joseph Kennedy, then Chairman of the Maritime Commission, advised the Congress:

> "The General Counsel of the Commission held in an opinion that the words 'conclusive evidence' in their statutory setting meant 'evidence sufficiently strong to lead four members of the Commission to the belief and conviction that the construction-differential subsidy actually exceeds 33-1/3 percent.' This opinion was unanimously followed by the Commission not only because of its inherent reasonableness but also because of the practical necessities which the Commission faced in its task of administering the Statute."

In determining the estimated foreign cost, of constructing a vessel, the Maritime Commission can consider the opinions of experts on its staff and these opinions, although they are characterized by the Comptroller General merely as "recommendations," are evidence to be considered along with the other evidence which convinces a member of the Commission.

Since the enactment of the Merchant Marine Act, 1936, the Maritime Commission made construction-differential subsidy determinations (under the provisions of Section 501 and 502 of the Act) in connection with the construction and sale of 244 vessels. All of these determinations of construction-differential subsidies have been in excess of 33-1/3 percent excepting, only, the ss AMERICA (the first vessel constructed under a construction-differential subsidy agreement with a construction-differential subsidy of 33-1/3 percent). All of these 244 construction-differential subsidies (excepting the ss AMERICA, and one C2 vessel) have been in excess of 40 percent.

The construction-differential subsidies in excess of 33-1/3 percent have been determined by the Maritime Commission upon the basis of its possession of convincing evidence that the subsidies were in excess of 33-1/3 percent.

In the determination of the Maritime Commission in connection with the sale of the three vessels to American President Lines, Ltd., and the two vessels to American Export Lines, Inc., five Commissioners were in possession of evidence which convinced them that the appropriate construction-differential subsidy was in excess of 33-1/3 percent. In determinations in connection with the sale of the vessel to the United States Lines Company, four of the five Commissioners were in possession of evidence which convinced them that the construction-differential subsidy was in excess of 33-1/3 percent.

The fact that at least four Commissioners were in possession of evidence which convinced them in each of the three cases, should constitute sufficient answer to the Comptroller General's charges. However, the Comptroller General maintains that the Maritime Commission "bases its determinations solely upon the recommendations of its staff" which, in many cases "made a large number of assumptions without foundation" and calculations "replete with errors and inconsistencies." For that reason, let us

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consider the evidence that was in the possession of each of the Commissioners when they approved the sales of the vessels under consideration.

As a matter of "judicial knowledge" the Maritime Commission was bound to give full consideration to the findings of the Congress as set forth in the pricing provisions of the Merchant Ship Sales Act of 1946 (Public Law 321, 79th Congress, approved March 8, 1946) and the legislative history of that Act which clearly and unequivocally establish a construction-differential percentage between construction costs of dry cargo vessels in the United States and in foreign countries of 50 percent, as of the date of the enactment of the Merchant Ship Sales Act of 1946.

Section 3(d) of the Act provides that the statutory sales price of dry cargo vessels shall be 50 percent of the prewar domestic cost of the vessel. Prior to the enactment of the Merchant Ship Sales Act, the Committee on the Merchant Marine and Fisheries, House of Representatives, 79th Congress, reported June 28, 1945 (House Report No. 831) as follows, regarding the pricing provisions of H.R. 3603, later enacted with certain modifications as the Merchant Ship Sales Act of 1946:

"Another factor which has an important bearing on the price to be charged to the domestic operator is the price at which vessels can be sold foreign, since the United States should not ask of its own citizens a higher price than that at which it is willing to sell a vessel to an alien. And certainly it will be impossible to sell to aliens at a price higher than the foreign construction cost.

* * *

"With all these considerations in view, the committee determined that foreign construction costs were the best price measure for vessels to be sold under the bill. From the information available to the committee it appeared that prewar foreign construction costs were approximately half of the prewar domestic construction cost, and making allowance for general increases in cost throughout the world, it would appear that a price equal to 55 percent of the prewar domestic cost would meet the current construction costs in foreign yards. Hence, the sales price of dry cargo vessels (called in the bill the 'statutory sales price') is to be fixed on the basis of 55 percent of the prewar domestic construction cost, except in the case of the unsubsidized operator, where the sales price is to be fixed on the basis of 50 percent of the prewar domestic construction costs (sec. 3 (c) and (d)). This differential in favor of the unsubsidized operator is discussed below under the heading, 'Differential in favor of unsubsidized operator'."

This would clearly establish a domestic construction cost of approximately 50 percent. The information in the possession of the Commission indicates that the rise in prices in the United States and in foreign countries from the period prior to the war to the date of the Commission's actions were substantially the same.

Besides the recommendations of the Commission's staff to the Commission regarding the appropriate foreign cost to be used for each of the six passenger vessels and the presentation of calculations supporting these recommendations, other factual information was available to the Commission, regarding the cost of vessels built in Europe and competitive bids which had been previously made by European yards.

One piece of important evidence which was known to the Commission at the time of the establishment of the foreign cost differential for the several vessels was the price which had been paid by the Alcoa Steamship Company for their two vessels contracted for in Britain. The information in the attached letter of August 9, 1948, from Alcoa had been made known for some time both to the Commission and its staff, as a result of a conversation between Mr. William Weber, Attorney for the company, and the Commission's staff. The figures had been directly transmitted by a telephone conversation between Mr. White, President of Alcoa, and Mr. Barnes of the Commission's staff. The information was immediately made known both to members of the Commission and the staff in general, and the later written confirmation by Mr. White, under the date of August 9, 1948, was merely a confirmation of information previously transmitted by telephone. This exhibit indicates that Alcoa was able to buy and did actually contract for the construction of two bauxite-carrying vessels in England shortly after the receipt of bids in June, 1947, at approximately 50 percent of the lowest American bid. (Exhibit No. 16.)

The Commission likewise had reliable information of certain bidding upon cargo vessels for Argentina and Brazil, all of which are recited in the attached letter dated August 1, 1949, from the Ingalls Shipbuilding Corporation.

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SPEAKING OF EVIDENCE — TAKE A LOOK AT THIS

The supporting "evidence" which the Comptroller General decries shows that the Maritime Commission was extremely conservative in its estimates of foreign construction costs. Anyone at all familiar with shipping knows that foreign yards will boost the apparent costs of ship construction to reduce the amount of subsidy it is possible for U.S. shipping interests to obtain. Nor will they, as the General Accounting Office so naively presumes, competitively bid on a ship which they know they are not going to get. If they did they would, if they were looking after their own interests, bid higher than the top U.S. bid. But the Maritime Commission has in its possession two letters which give an accurate determination of foreign costs as obtained through actual competitive bidding in the world market. The first of these letters is to the Commission from William C. White, president, the Alcoa Steamship Company. The second letter is from Monro B. Lanier, president, the Ingalls Shipbuilding Corporation. The letters are as follows:

Dear Mr. Bates:

At the request of Mr. Barnes in your Bureau, I am confirming my telephone conversation with him of this afternoon.

In June of 1947 we received bids from six American shipbuilders and five European shipbuilders on two different ore carriers, one 353 feet in length and the other 422 feet in length. Both of these ships were intended for use in the bauxite trade, operating between Surinam and Trinidad and carrying only twelve passengers.

The lowest bid which we received from an American builder for the 422 foot ship was $3,494,000. The lowest bid which we received from a European builder for a ship built approximately to our specifications but including certain substitutions of materials impossible to obtain abroad was $1,720,000. The lowest American bid for the 353 foot ship was $2,710,000 and

" . . . The lowest American bid for the 353 foot ship was $2,710,000 and the lowest European bid for the same ship was $1,350,000 . . . " so says WILLIAM C. WHITE, President of Alcoa Steamship Company, in a letter to the Maritime Commission.



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the lowest European bid for the same ship was $1,350,000.

Following receipt of these bids, we placed an order for two vessels of 422 feet in length with a British yard. While these vessels will not meet our specifications exactly, all substitutions will be equivalent of our specifications, and for all practical purposes the vessels will be as our naval architects designed them.

Very truly yours,

ALCOA STEAMSHIP COMPANY, INC.

/s/ WILLIAM C. WHITE,

WILLIAM C. WHITE,

President.

Dear Sir:

Referring to our discussion of the comparative prices of European built ships with those of the same or similar class constructed in the United States since the close of World War II: Many hypothetical cases and assumptions have been published as to the equivalent cost of ship construction in the United States, Great Britain, and continental Europe. It is my understanding that some of these assumptions are based upon investigations and visits at British and Italian yards with the acceptance, at least in part, of the statement of the representatives of the shipbuilding industry in those countries as to costs as well as postwar statistical data published as to the rising costs in Europe.

No statements which we have had the opportunity to see have been published as to the comparative sale price of British and European built vessels with those of similar class and characteristics built in the United States as there have been few instances recorded of such competition. However, the writer, in behalf of the Ingalls Shipbuilding Corporation, has been active in the competition for business in South America with British and European yards as well as with Canadian yards continuously since the close of World War II in Europe. We have prepared designs and estimates for each South American maritime nation and have submitted competitive bids with all of the European countries since the resumption of the activity of the yards of each.

Immediately following VE Day, the British yards booked a substantial tonnage of merchant ships equivalent to the U.S.M.C. design C2 for Argentina. These vessels were first offered to the Ingalls Shipbuilding Corporation as a result of negotiations subject to the approval of the United States State Department. This approval was not granted and the business was transferred to British yards by the Flota Mercanta del Estada at less than one-half the Maritime Commission contract price for this class vessel.

Subsequently, early in 1947, public bidding was invited by the Flota Mercanta del Estada for three to six cargo and three to six combination passenger cargo ships with specifications approximately equivalent to design C1A and C2 victory hulls with passenger quarters for 150 passengers, similar to the Alcoa victory conversions.

The competitive bids were published as per the attached memorandum, Enclosure A. From this report, it will be observed that for the equivalent of the C1A cargo vessel, the Italian yards bid approximately 45% of the low bid which was that of our company and less than 40% of the high American bid. The low Danish and Canadian bids were approximately 60% of the Ingalls' bid and 50% of the other American bid, while the low British bid on a fixed price basis was slightly less than one-half of the low American and less than one-half of the higher American fixed price bid.

On the combination cargo passenger ship, the three Italian bids averaged 45% of the low American bid while the low British bid was approximately 50% of the low American bid.

During 1947, the Ministry of Public Works of Argentina issued invitations for bids on three to four sea-going 2,000 cubic meter Hopper type suction dredges similar in design to U. S. Army Engineers' 3,000 cubic yard Hopper dredges of the Comber class, four of which were then under construction at the Pascagoula yard of the Ingalls Shipbuilding Corporation for the Corps of Engineers. Ingalls was the only bidder on the Argentine vessels at $4,200,000 each. The bids were not published but we were advised by the Ministry that the order was placed, two with British and two with Dutch yards at prices averaging 43% to 47% of our bid price.

In 1948, bids were invited by M.O.P., Argentina, for the construction of 12 to 16 1,200-ton cargo dead weight twin screw motor ships for the river transportation service on the Parana. The bids were not made public. We were advised by the Minister that the Italian bid price was 45% of our bid, British 50%. We accepted an offer of contract for four of the ships at a reduction in bid price of 10% (the extent of our margin) which was warranted by the much shorter delivery guarantee. Eight of the vessels were awarded to Italy and four to British yards.

On March 6, 1949, bids were publicly opened by the Department of Rivers, Harbors, and Canals of the Ministry of Public Works of Brazil for the construction of one sea-going Hopper type 800 cubic yard suction dredge. Enclosure B is the tabulation of the bids. From this, it will be observed that the Ingalls bid was the only American bid submitted and that the Dutch bid was approximately 43% of our bid price and the low British bid, approximately 50%.

In April, 1946, C. A. Navigacion de Venezuela received bids for six small coastal cargo vessels of approximately the same specifications as the Argentine river cargo vessels purchased by the Ministry of Public Works. The bids were not published. The contract was awarded to a Canadian yard at approximately 20% below the Ingalls bid price which was next low, while the British bids were said to be 50% of the Canadian price but were refused on account of the quoted delivery time of more than two years as compared to seven months for Canada. It might be



" . . . the three Italian bids averaged 45% of the low American bid while the low British bid was approximately 50% of the low American bid," wrote MONRO B. LANIER, President of Ingalls Shipbuilding Corporation to the Maritime Commission.

pointed out that in every instance of competitive bids by Canadian yards with those of the United States since the beginning of 1948, the Canadian bids have been from 10% to 20% below the lowest American bids due to the vast difference in the wage scale applicable to the industry in these countries.

In closing, I beg to state that irrespective of the published reports as to rising costs in shipbuilding in Great Britain and the continent of Europe, that the low bid prices on construction of ships are invariably not more than one-half and frequently less than the lowest American bid and hence as the great difference in the heretofore promised delivery dates is diminished, there will be no possibility of successful competition with British and European yards by any American yard for self-propelled vessels that may cross the Atlantic under their own power.

I might also call to your attention that Japanese shipyards with the alleged support of the United States are beginning to compete in the world market for ship construction and are reported to have accepted contracts from European flag lines at lower prices per dead weight ton than the same vessel can now be purchased in Europe.

Very truly yours,

(Signed) MONRO B. LANIER,

Monro B. Lanier,

President.

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William Bennett, New York, principal surveyor of Lloyd's Register of Shipping in the U.S.A., was admitted to the freedom and livery of the British Worshipful Company of Shipwrights at a recent meeting held at London, at which Sir William Currie, the prime warden, presided.

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". . . . the choice between the alternatives of maintaining the remaining Liberty fleet in lay-up or selling a fairly large number for private operation under the American flag."

SHALL WE SUBSIDIZE AMERICAN FLAG

TRAMP SHIPPING

Yes, says the Tramp Shipping Committee of the Maritime Commission. Here are some of the reasons why contained in extracts from the report to the Commission.

During the years immediately preceding World War II approximately one-third of United States overseas dry cargo foreign commerce was comprised of tramp cargoes, of which a negligible quantity, only 730,000 tons, was carried in American flag vessels. On the other hand, in 1938 American liner services, the backbone of the United States merchant fleet, fostered and aided by the Government, carried only 23 percent of the total exports and 27 percent of total imports, *or an average of about 25 precent of the total cargoes carried in foreign trade.* Thus, American services, liner and tramp, carried a little over 26 percent of the total United States ocean-borne dry cargo foreign trade.

Table I shows the figures in detail. It will be noted from this table that during 1937 and 1938 American flag vessels operated almost entirely as liners, following a type of operation that had prevailed for decades. However, of the total liner cargoes, American liner vessels carried 43 percent in 1937 and only 37 percent in 1938, and of all cargoes (tramp and liner) only 29 percent and 25 percent, respectively.

To carry 50 percent of the total dry cargo exports and imports, American flag vessels would have had to carry 27,000,000 tons in 1937, and 22,000,000 tons in 1938. In other words, because there were no United States flag tramp services, United States liner services would have had to increase their share of liner cargoes from *43 percent to 75 percent* for 1937 (50 percent of 54,000,000 tons, or 27,000,000 tons, divided by total liner cargoes of 36,026,000 tons), and for 1938, *from 37 percent to 73 percent.* Whether so pronounced a domination of foreign trade can normally be expected is highly questionable. Indeed, it has become the practice of applicants for subsidy under Title VI to insist that the applicable standard of adequacy under Section 605(c), which the Commission has said to be identical with that set up by Section 101, is 50 percent of the liner cargo rather than of the total cargo.

It is true that in the period just following the war, the American merchant fleet has achieved the Congressional goal by carrying well over 50 percent of the total ocean-borne foreign commerce of this country. To a large extent, however, this position has been artificially maintained by factors thought to be non-recurrent. This is particularly true of the abnormal movements of bulk commodities to Europe just after the war. Just what the effect has been of the rule of 50 percent American flag participation in the ECA program is difficult to measure. It is certain that industry pressure to maintain that rule is a sign of its importance. As the Marshall Plan reaches its end, it is presumed that the abnormal movement of coal and grain will likewise cease, or at least fall to normal levels. But even the end of the Marshall Plan need not be awaited for current trends to show such a falling off of cargoes that American flag participation in our foreign trade is already below the 50 percent mark. The position of foreign fleets is being reestab-

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Table I

Cargo Transported by Dry Cargo Liner and Tramp Vessels in United States Ocean-borne Foreign Trade for the Calendar Years 1937 and 1938.

(In thousands of tons of 2,240 pounds)

TRADE SERVICE / FLAG	1937 Tons	1937 P'Cent	1938 Tons	1938 P'cent
Exports & Imports—				
Total	54,044	100	44,071	100
Liner	36,026	67	29,150	66
U. S.	15,559	29	10,907	25
Foreign	20,467	38	18,243	41
Tramp*	18,018	33	14,921	34
U. S.	.....	..	730	2
Foreign	18,018	33	14,191	32
Exports	25,261	100	23,447	100
Liner	17,264	68	15,168	65
U. S.	7,368	29	5,319	23
Foreign	9,896	39	9,849	42
Tramp	7,997	32	8,279	35
U. S.*	.....	..	177	1
Foreign	7,997	32	8,102	34
Imports	28,783	100	20,624	100
Liner	18,762	65	13,982	68
U. S.	8,191	28	5,588	27
Foreign	10,571	37	8,394	41
Tramp	10,021	35	6,642	32
U. S. *	.....	..	553	3
Foreign	10,021	35	6,089	29

* Includes irregular type operations, i.e., liner vessels temporarily assigned to operate as tramp vessels.

A large amount of cargo, especially that imported into the United States is transported by "industrial carriers." Two operators alone imported 2,185,000 tons of bulk commodities during the calendar year 1938. Technically, such cargo can be classed neither as liner nor as tramp since it was not available to either type of service. However, since the operations of "industrial carriers" are much more closely allied to liner than to tramp service, the cargo carried by industrial ship operators was classed in Research Division records as liner traffic.

lished simultaneously as the cargoes fall off for American vessels.

Character of Post-War Trade

At the same time, the character of post-war trade affords illuminating insights into changes that may be occurring in the character of American shipping services. Table II illustrates several significant points:

1) Tramp-type cargoes made up more than half of the total post-war United States ocean-borne foreign commerce, as compared with one-third in 1937 and 1938.

2) The ratios of liner and tramp cargoes in *export* trade were reversed, i.e. 64 percent of the tonnage in fiscal 1948 was tramp cargoes, while in 1937 and 1938 about two-thirds of the tonnage was liner cargoes.

3) Liner cargoes comprised a larger share of United States *imports* than they did in 1937 and 1938, with United States flag vessels increasing their share from 28 percent and 27 percent in the former years to 44 percent in fiscal 1948.

4) Whereas United States flag vessels carried tramp cargoes amounting to only 1 percent of the exports and 3 percent of the imports in 1938 and none in 1937, in fiscal 1948, 34 percent of the tramp cargo exports and 13 percent of the tramp cargo imports were carried by American flag vessels.

5) United States flag vessels carried 52 percent of the exports, 57 percent of the imports and 53 percent of this country's total ocean-borne foreign trade in fiscal 1948 as compared with an average of 26 percent (exports), 29 percent (imports), and 27 percent (total exports and imports) during 1937 and 1938 combined.

6) In 1937 and 1938 export and import cargo tonnages were virtually in balance; in fiscal 1948, however, export cargo tonnages comprised about 71 percent of the total United States ocean-borne trade with imports accounting for only 29 percent. In large measure, this reflects huge outbound movements of coal, grain and some other bulk commodities, with the ships returning in ballast. On the other hand, the increase in inbound cargoes carried by United States flag liners indicated that they are returning with cargo formerly carried by tramps.

7) Although United States flag ships carried 53 percent of total United States ocean-borne dry cargo foreign trade in fiscal 1948, American flag liner services accounted for only 25 percent of the total. The remainder, or 28 percent was carried by United States flag tramp vessels.

The salient points of Tables I and II are indicated graphically in Chart I.

Tramp Fleet Vital to 50 Percent Goal

From all points of view, we are inclined to believe that it is in the direction of developing a substantial fleet of tramping vessels that the best hope lies for reaching the statutory goal of carrying 50 percent of our dry cargo foreign commerce. The discussion above suggests that there will be during the foreseeable future a substantial body of tramp cargo representing a large proportion of our commerce. In addition, we have a suitable fleet in being and available if a competitive standing can be reached; and experienced American operators trained during and since the war are in fact operating today and for so long as profits are foreseeable.

The first of these conclusions, namely, the continued existence of a corps of tramp cargo representing a large proportion of our commerce, can be considered as probable even when expressed in cautious and conservative terms. It was said by the Commission in 1937 that there would be a demand for the services of the economical and flexible tramp just so long as there are commodities to be shipped in world trade whose low intrinsic value makes cheapness of transport more significant than speed or regularity of service, and so long as the movement of such cheap and bulky cargoes is subject to seasonality and irregularity. This general principle is not refuted by current cargo trends, so far as we know them. Before the war, for example, coal and coke ranked sixth among American sea-borne exports on the basis of weight. Although its role was considered unimportant in contrast with the British export trade, four-fifths of whose total weight consisted of these commodities, American coal export remained at a fairly steady level during the era between wars. Moreover, before World War II, the Commission observed the relative decline of the British coal trade, "which may never again reach its prewar (World War I) importance." The continuation of this trend seems not unlikely, with a possibility, notwithstanding the relative emergence of Poland as a coal exporting nation, that the United States may somewhat expand over the prewar level its own exports of this commodity, which has always been a predominantly tramp type cargo. American coal exports have, of course, heavily predominated in the post-war period.

Another factor of great importance is the growing need of the United States for the importation of certain strategic and critical materials. In our opinion, this need is by now so clearly established that inbound movements of this nature will constitute normal trade conditions in the future. This is true not only as to materials which the United States does not produce in sufficient quantities for its commercial and defense requirements but also as to resources depleted as a result of extensive utilization during two great wars.

Table II

Cargo Transported by Dry Cargo and Tramp Vessels in United States Ocean-borne Foreign Trade for the Fiscal Year 1948*

(In thousands of tons of 2,240 pounds)

TRADE SERVICE / FLAG	1948 (Fiscal) Tons	Percent
Exports & Imports -Total	93,900	100
Liner	44,400	47
U. S.	23,800	25
Foreign	20,600	22
Tramp	49,500	53
U. S.	26,600	28
Foreign	22,900	25
Exports—Total	66,500	100
Liner	23,700	36
U. S.	11,700	18
Foreign	12,000	18
Tramp	42,800	64
U. S.	23,000	34
Foreign	19,800	30
Imports -Total	27,400	100
Liner	20,700	75
U. S.	12,100	44
Foreign	8,600	31
Tramp	6,700	25
U. S.	3,600	13
Foreign	3,100	12

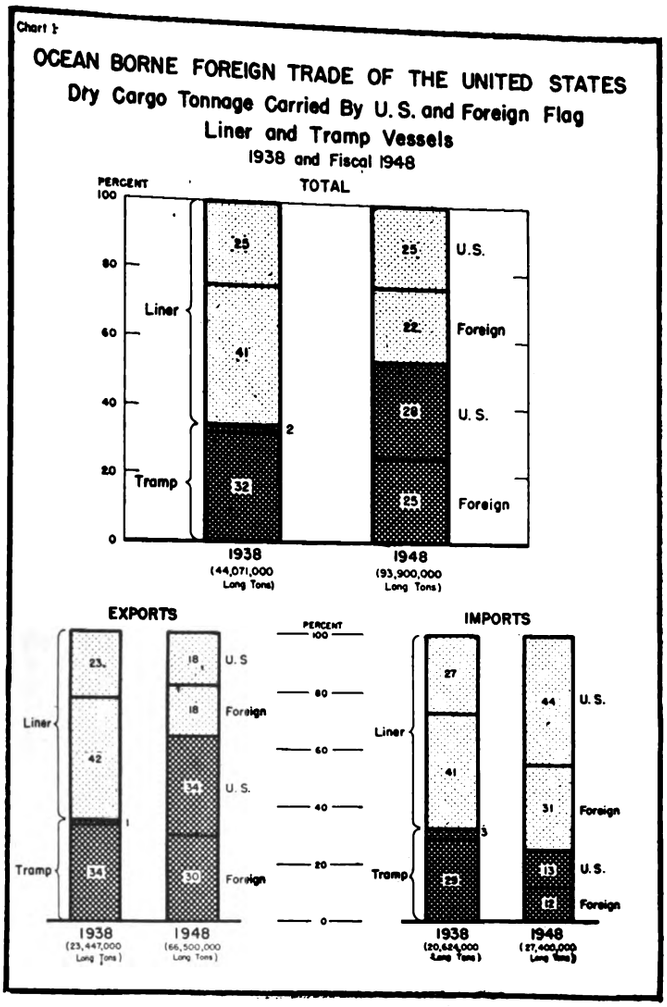
* Estimated and preliminary. Based on Bureau of Census and U. S. Maritime Commission data.

Why Government Aid for Tramps?

Several additional considerations seem to support the conclusion that American flag tramp shipping should receive Government aid at this time.

The first consideration is founded upon the simple choice between the alternatives of maintaining the remaining Liberty fleet in lay-up or selling a fairly large number for private operation under the American flag. An operating vessel is always to be preferred to a laid-up vessel. It is estimated, moreover, that it will cost in excess of $5,000,000 to lay up the approximately 200 vessels now under charter, including the expense of towing to reserve sites and of bottom preservation. The annual cost of maintenance is estimated at about $2000 per vessel or $400,000 for the 200 vessels; and in addition $8,000 must be expended every six years for bottom preservation, or about $1,600,000 for the group now under charter. *Thus, exclusive of repairs, the Government's cost to lay up and maintain these 200 ships will be approximately $11,000,000* over a period of 10 years. Furthermore, of the approximately 1800 laid-up dry cargo ships, about 900 require repairs estimated to cost $165,620,000. In considering the dif-

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ference in effectiveness of a fleet laid up and one actively operating, the time element is vital in national emergencies. Repair and reconditioning facilities would at once be over-taxed. The value of a ship in operation increases in proportion to the time required to repair and recondition one in lay-up.

As against the very large expenditures required to lay up the 215 vessels now on charter, and the incalculable factor of breaking them out and reconditioning them in time of war, must be weighed the advantages of active operation and an estimated income to the Government from sale of about $100,000,000.

Effect of Tramps on Freight Rates

Since so large a part of total United States dry cargo ocean-borne foreign commerce is comprised of tramp cargoes, American interests should be protected in the matter of freight rates and services. An example of the effect American tramp tonnage may exert upon rates was recently noted in the outbound movement of ECA coal from the United States to France. From July through November, 1948, average rates for bulk shipments of this commodity in foreign flag vessels ranged between $7. and $8. per ton, although they reached a low of from $6.50 to $6.75 per ton for three vessels in September. There was an almost immediate upward reaction in freight rates when the now famous "Hoffman letter" was issued stating:

> ". . . it is my intention not later than January 1, 1949, no longer to require that 50% of the ECA bulk cargoes be carried in United States flag ships unless such ships are available at competitive rates."

Between December 3 and December 13, rates rose to $8.40 per ton and to $8.75 per ton for consecutive voyages.

It is evident that the chartered and owned United States flag fleet of Liberty vessels helped to stabilize the market, for the indication that they would not be required by January 1, 1949 immediately affected the rate structure.

This may become an even more important factor in view of the accelerated depletion of vital natural resources in the United States resulting from their intensive exploitation during the two great wars. Our growing need for the importation of raw materials for commercial and strategic use which will probably constitute normal trade conditions in the future, requires us to be concerned not only that we shall not be dependent on foreign tonnage but as well that freight rates remain at reasonable levels. A tramp fleet under the American flag will serve both ends

Economic Effects of Tramp Shipping

In any study of the American economy, consideration must be given to the ship construction, ship repair and allied industries, key industries that cannot be permitted to disintegrate. In large measure, however, they are dependent upon the maintenance of a strong, active merchant marine and a positive, well planned and executed ship construction and replacement program. If the American merchant marine acquires a tramp fleet, these industries can be assisted to retain their trained personnel and keep pace with technical advances. A single instance may be cited. The average maintenance and repairs of a Liberty vessel run to about $44,000 per annum. (See Table III.) A fleet of 200 such vessels would yield annually almost $9,000,000 to the American repair industry.

Advantages to Labor

From the point of view of labor and employment, tramp shipping can also offer significant contributions. For example, based upon a tramp fleet of 200 ships, it is estimated that 8,000 officers and seamen would be employed with payrolls amounting to about $37,303,000 annually. As compared with the total of about 40,000 men at present employed in the privately owned United States dry cargo fleet, the contribution of the tramp fleet would be substantial.

The above data do not take into consideration man hours and payrolls involved in ship construction, insurance, manufacturing equipment and other allied services, as well as shoreside operations of the tramp companies themselves, but they should not be ignored, nor should the danger of curtailment of present operating organizations. Such organizations are built up over a period of years and cannot be re-established for efficient operation within a few months. The desirable condition is to have numerous moderate sized organizations capable of rapid and efficient expansion during war. We know that a single efficient operating organization can in an emergency handle up to 100 vessels.

Necessity for Government Aid

The foregoing discussion establishes that American liner vessels cannot achieve the goal of carrying at least half of our ocean-borne foreign commerce, and that it is in the direction of American flag tramp operations there lies the possibility of achieving that goal.

It is, however, clear that just as in the case of the liner services, no American flag tramp fleet can be envisaged without substantial Government aid. The simple fact that before the war there was in effect no American flag tramping service sufficiently demonstrates the correctness of this conclusion. In the first place, an industry barely starting under the American flag could not be expected to provide the capital investment necessary unless it has access to the kinds of Government aid available to other operators. In the second place, even if the fleet could be acquired on reasonable terms, the data appearing in Table III demonstrate that it could not be maintained in operation without Government aid. The disparities in costs of wages, subsistence, repairs and insurance make it evident that even under the rather favorable conditions obtaining at the beginning of 1949 United States flag tramp operators could not un-

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assisted, compete for long with foreign flag operators. The table shows that the vessel expenses of foreign flag operators ranged from one-third to one-half those of American flag operators. This is a burden which an unsubsidized operator could not bear in more stable times.

Tramp Shipping Pro and Con

Should the United States encourage its private shipping industry to engage in tramp operations under the American flag?

It is our opinion that any attempt to base conclusions as to the composition of the American Merchant Marine, and the policy which should guide it in the post-war period, upon factors prevailing before the outbreak of World War II is erroneous, and may be detrimental to the best interests of the nation.

From the standpoint of the cost to the taxpayer, to the national economy and to the national defense, a decision will have to be made between two points of view, viz:

1. Shall we spend millions of dollars to repair and maintain a fleet of idle vessels in lay-up over a period of years without benefit to the foreign commerce of the United States? *or*
2. Shall we augment the privately owned American merchant marine with a tramp fleet, even if that should entail direct financial aid by the Government, knowing that this course would result in:

a) an operable fleet serving the needs of the national economy and immediately available for defense.
b) receipt by the Government of millions of dollars through the sale of such ships as the tramp operators would have to purchase before receiving any Government aid,
c) increased employment of sea-going and shore personnel with milions of dollars being spent by the operators for wages, repairs, supplies and other items which are part of ship operation.
d) replacement of tonnage as it becomes obsolete either through purchase of "C" type vessels in turn being replaced by new construction or by constructing specialized ships to meet the requirements of certain tramp trades?

Moreover, if we desire to effectuate the policy of the United States to carry at least 50 percent of the total United States ocean-borne dry cargo foreign commerce carried in American flag vessels, then, it must be emphasized again, this goal can only be achieved through the addition of a tramp fleet to the liner services, for American flag liners alone cannot attain this end.

Problems of Government Aid to Tramp Shipping

All are agreed that if Government aid is to be extended to tramp shipping it must be under conditions which will not affect adversely the development of liner operations. The true place of tramp shipping is that of a complementary branch of transportation carrying cargoes either not carried by liners, although important to the national economy, or filling out the service when a liner is not available. Tramp shipping must, therefore, be supervised in order to prevent undue competition to the American flag liner which, whether or not subsidized, continues to be the primary concern of the United States because it is the first line of defense that the merchant marine can set up in time of emergency.

It is true that in too rigid a circumscription of traditional freedom to range wherever cargo can be found there lies a risk of strangling tramp shipping. But a majority of the committee believe that, while reasonable control of the employment of tramp ships in order to avoid encroachment in the field of proper liner operations will present many difficult problems, such control is feasible. In the past three years, the Commission has chartered as many as 1500 ships to private operators for tramp or liner operations, and its experience, we believe, demonstrates the practicability of controlling the use of tramp and liner vessels under subsidy contracts to their common benefit. Some of the guiding principles are set out below.

Protection of Liner Services

As tramp shipping is to be complementary to liner service, Government aid should be extended essentially to suitable dry cargo vessels which are offered for employment by the owner to transport (1) full ship loads of bulk cargoes from the United States to any foreign port or ports, and (2) full ship loads of bulk cargoes from foreign ports to the United States. Around this corps of what is essentially true tramp shipping there may lie an area of permissible operations by tramps which, however, would require the strictest supervision, if indeed the Government should under any circumstances consider subsidizing them. These could include the carriage of general cargo outward and inward between United States and foreign ports not regularly or adequately served by American flag liners. As well, the carriage of partial ship loads of bulk cargoes between ports regularly and adequately served by American flag liners might be permitted in individual cases with the prior approval of the Commission, taking into account the effect on established American flag operators in the trade; this would be the typical instance of filling out the liner service.

A serious question relates to the practice, now well established, by which liners carry full loads of bulk commodities inbound to the United States. We must anticipate a conflict of interests with tramp operators, at least in some cases, and the consequent need for Commission regulation.

Aid for Cross-Trades Operation

We have given consideration to the problem of subsidizing operation by tramps in their traditional manner between foreign ports. As the essential economic purpose of subsidizing these tramp vessels would be to make them available for the carriage of American foreign commerce, the question at once arises whether any aid should be given for foreign-to-foreign operations. Failure to do so would undoubtedly tend to discourage traditional freedom to operate worldwide. Although not wishing to inhibit such movement, it is our conclusion that economic and defense considerations do not justify their full subsidization. If granted at all, subsidy should be limited in scope, perhaps to wages and such other of the subsidizable items, if any, as to which the Commission may determine that the operator is at a definite disadvantage.

Summary and Conclusions

1. In traditional terms, a tramp vessel is one that operates on irregular or unscheduled sailings from one port of loading to one port of discharge, lifting one dry cargo commodity usually of low value without mark or count and from shipper to one consignee. The tramp does not usually hold itself out as a common carrier and is free to travel anywhere on any terms, not infrequently being chartered out on time terms. There are no conferences of tramp operators, affecting the foreign commerce of the United States, since tramps are excluded from the benefits of Section 15 of the Shipping Act, 1916. Characteristically, the tramp is a low standard vessel of slow speed serving trades in which time is not a critical factor.

2. Before World War II about one-third of the total ocean-borne foreign commerce of the United States moved in tramp vessels, practically all of which operated under foreign flag. On the other hand, in the fiscal year 1948, more than half of our ocean-borne dry cargo foreign

(Continued on Page 56)

Table III

Comparison of Vessel Expenses of a Liberty Vessel under U. S. Flag and Principal Foreign Flag Competitors

(Based on a 50 day voyage) (1)

Vessel Expense	U.S.	British	Dutch	Norwegian	French	Panamanian
Wages	$25,550	$ 8,072	$ 9,700	$ 8,733	$ 8,421	$13,093
Subsistence	3,800	2,717	2,580	3,116	3,362	3,150
Stores, Supplies, Equipment	3,300	3,150	3,300	3,300	3,300	3,000
Repairs & Maintenance	6,350	3,500	4,660	3,750	5,000	5,715
Insurance H & M	4,950	3,800	3,850	3,800	4,300	4,350
P & I	2,450	1,633	1,633	1,633	1,633	1,633
Total	$46,400	$22,872	$25,723	$24,332	$26,016	$30,941
Cost per day	$928.00	$457.44	$514.46	$486.64	$520.32	$618.82
Differential in favor foreign flag vessel	— 0 —	50.71%	44.56%	47.56%	43.93%	33.32%

(1) These figures are based on costs reported to the Bureau of Government Aids as of January 17, 1949, and are subject to revision to reflect current costs.

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WASHINGTON Report

By The LOG's Own Correspondents

Government Aid Urged for Tramps

The Tramp Shipping Committee of the USMC, in a lengthy report, has urged amendment of shipping statutes so as to extend construction and operating subsidies and mortgage aid to American tramp shipping. Premature release of the report before even Commissioners had a chance to look at it stirred the wrath of the Commission and brought indications that the report may be shelved for some time.

Premature release of the report (See page 36 of this issue of The LOG) after the Tramp Committee had agreed to keep the study confidential until Commissioners had a chance to study it, hastened plans by Chairman Fleming's office to set up new information procedures.

The Tramp Shipping Committee is headed by Paul Sullivan, and has been engaged for about two years in studying the matter.

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Suez Toll Reduction Possible

American shipowners have joined with their British contemporaries in seeking a reduction of Suez Canal tolls based upon the increasing use of that facility, as well as higher profits from operations

The original request for reduced Suez dues was made by Colin Anderson, chairman of the General Council of British Shipping to Sir Harrison Hughes, British vice chairman of the Suez Canal Company. Sir Harrison replied that the request would be studied.

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Aids to Foreign Shipping Increase

In several recent reports to its membership NFAS here has outlined how aids to both British and Italian shipping have been increasing. One report shows that the British Government recently permitted one of its largest steamship companies, Union-Castle Mail S.S. Co., Ltd., to take depreciation of approximately 22 percent for the first year on its two new passenger liners built at an aggregate cost of $25,000,000.

The Federation pointed out that American shipping had asked Congress for authority to take up to 15 percent in any taxable year. (It was learned from members of the HMM&F Committee they would approve a 10 percent depreciation allowance based on USMC recommendations.)

Among other foreign nations allowing their shipping generous depreciation, the NFAS listed Sweden which allows free depreciation, that is any amount until the investment is absorbed.

As for Italy, the NFAS studies showed that under an Italian law passed last March all Italian shipping company revenues resulting from the operation of newly constructed vessels are exempted from income tax payments for the first three years of the vessels' operations.

The Italian aids go much further, however, in that the law provides that the Government will contribute directly up to one-third of the total cost of construction of a new vessel. In addition the Government will guarantee up to 40 percent of the cost of the vessel. With the total therefore being 73 percent, the shipowner is thus required to provide only 27 percent of the costs.

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SCAP Using Foreign Tankers

American tanker operators, through the NFAS, are urging SCAP to make greater utilization of American tankers, many of which are now in layup for lack of employment.

Latest data here shows 28 Japanese flag tankers, owned by 13 Jap companies, of which three are whaling tankers. At least 14 Japanese tankers are operating for SCAP from the Persian Gulf to Japan carrying Diesel and black oil.

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Chartered Vessels Continue Decline

Net number of bareboat charter vessels in operation in August had declined to 267, the lowest number since the chartering program began after the war. The decrease was attributable said Washington shipping officials to reduced cargo offerings and a weak freight market.

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Magnuson Plugs for Shipyard Workers

Senator Warren Magnuson, as this is being written, has assured the CIO Maritime Committee here, that he will introduce an amendment to the Third Deficiency Appropriation Bill asking for $25,000,000 for the Maritime Commission to put into "ready" condition 134 vessels of the National Defense Reserve Fleet.

From Washington observors it was learned that Senator Magnuson will have a large number of Senators act as co-sponsors of the amendment, as well as a number of Senators who have pledged to vote favorably on the matter when it comes up on the floor of the Senate.

Much of the initiation of the amendment comes from the CIO shipworkers union who are now feeling the pinch of unemployment as Labor Department statistics show continual declines in number of shipyard workers in private yards, as well as decreases in workers in naval yards.

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Military Aid Cargoes Needed For American Vessels

National Federation of American Shipping, on behalf of U.S. shipowners, joined by components of AFL and CIO, have petitioned Congress to insert a clause in the Military Assistance Bill similar to that already in ECA guaranteeing that at least 50% of the cargoes carried in this program will move on American ships.

Several of the AFL maritime unions have indicated they believed that 100% of such cargoes should be carried in American ships. A number of Senators and Representatives, have indicated their wholehearted support of the maritime industry's request

Speaking on behalf of American shipping, NFAS President Frazer A. Bailey told the Senate Foreign Relations Committee:

"When the U.S. generously agreed to aid in the economic recovery of . . . the Marshall Plan nations . . . it provided that not less than one-half of the cargoes to and from the U.S. made available under the . . . ECA . . . be furnished ocean transportation by U.S. vessels. This action was in recognition of the necessity of supporting our merchant vessels as an integral part of the national economy and national defense. It seems to us that in the case of military aid provided in S. 2388, there is as strong, if not a stronger reason, why the policy adopted in the ECA Bill should be applicable here. The public hearings held, the extended debate, and the decisive vote of this particular provision seem to us ample evidence that it is the will of Congress that American shipping shall participate in the ocean transportation resulting from economic and military aid programs."

The military aid program that passed has been estimated by observers here to amount to $500,000,000 to $1,500,000,000, of which about 90% would be in military supplies produced or manufactured in the U.S., thus providing a sizeable volume of cargo for ocean transportation.

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American Merchant Marine Flag

Shipping interests in Washington have been urging Congressional amendment of the U. S. Code to provide for a Merchant Marine Flag of the U. S. Such a flag would be composed of 13 horizontal stripes, alternate red and white, and the union of the flag would be a large white anchor set diagonally in a blue field with the stock of the anchor at the top of the field nearer the hoist.

According to the proposal the display of the flag would be voluntary on merchant vessels and would not replace the U. S. national ensign. Approximately 23

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countries have Merchant Marine flags separate and distinct from their national flags.

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Legion Promotes Merchant Marine

The American Legion offices here have made public a special report made to the 31st National Legion Convention held in Philadelphia, Pennsylvania, the last of August showing that the Legion has carried out an extensive educational campaign about the Merchant Marine during the past year. The program was conducted through the medium of printed booklets, brochures and radio shows.

According to the report, 200,000 pieces of printed material about the Merchant Marine were mailed by the Legion during the year, climaxed by the testimony of the Legion's Merchant Marine Committee chairman before Congress advocating long range legislation which would help to overcome present deficiencies in the U. S. flag fleet.

The report, which was adopted by the National Convention, recommended the enactment of legislation which would encourage private capital to enter into the construction, maintenance and operation of U. S. merchant ships in both domestic and foreign commerce necessary to meet economic and national security requirements; a personnel training program, and that National Headquarters of the Legion continue to prepare and carry out an extensive educational campaign in the interest of the American Merchant Marine.

The report further cited the "most harmonious relations with the National Federation of American Shipping and the Shipbuilders Council of America," and paid particular appreciation to "Mr. John F. Rudy, Director of Public Relations for the National Federation of American Shipping for the splendid cooperation he has given at all times." The report stressed that an adequate Merchant Marine is "just as important as a well trained, well equipped Army, Navy and Air Force."

The 31st Annual National Convention of The American Legion in Philadelphia on August 31 adopted a 16-point program to promote and strengthen the American Merchant Marine, among other things urged that henceforth 50% of the nation's foreign commerce be carried in U. S. flag ships, and urging the Merchant Marine to be treated with equal importance with other segments of national defense.

While reaffirming most of last year's comprehensive program for the Merchant Marine, The Legion added several new items of support, commending the Maritime Commission for its progress under its reorganization and taking a backhand slap at the criticism of the Commission over Comptroller Warren's allegations, declared:

"That the Administration of the Government adopt for national security reasons, a realistic policy which will prevent disclosure of the costs and details of installations of military equipment on all American ships constructed in the future."

Meanwhile the Veterans of Foreign Wars at its annual convention in Miami, Florida, a week earlier, for the first time in its 50-year history adopted a 7-point program of support for the American Merchant Marine.

Thus, for the first time in the history of the American Merchant Marine, it had the unqualified support of more than 5,000,000 active veterans, or possibly a total of 20,000,000 people.

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Ingalls Low Prototype Bidder

Eight out of 23 American shipyards submitted bids on the U. S. Maritime Commission's proposed prototype cargo vessel which is to be the basic model for large scale shipbuilding in any future emergency, with Ingalls Shipbuilding Corporation the lowest bidder with $4,864,000 on fixed price basis and $4,744,000 on adjusted price basis.

Preliminary designs of the vessel were worked out in cooperation with a number of U. S. flag steamship companies, and call for 477 ft. 6 inch overall length, 66-ft. beam, 12,500 normal shaft horsepower, sustained speed of 18.5 knots and deadweight of 10,500.

Other bids received, with the first figure being the fixed price and the second figure the adjusted price basis, were:

Newport News Shipbuilding & Drydock Co., $5,150,000 and $4,900,000; Bath Iron Works, $6,826,995 and $6,501,900; New York Shipbuilding Corp., $6,432,000 and no bid on adjusted price; Bethlehem Steel Co., San Francisco Yard, $7,498,000 and $6,816,000; Bethlehem (Sparrows Point Yard), $6,570,000 and $5,973,000; Gulf Shipbuilding Corp., $5,934,000 and $5,700,000, and Sun Shipbuilding and Dry Dock Co., $5,994,518 and $5,638,624.

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Shipbuilding Slowdown

Washington shipping observers were in general agreement that the long and frequently vindictive argument between the U. S. Maritime Commission and the Comptroller General (For a full report see page 27 in this issue) would not lead to disturbing present shipbuilding work, but would result in the Commission proceeding slowly, more deliberatively and cautiously on any future shipbuilding contracts.

Although the Subcommittee has not yet made its report, at this writing, shipping officials in and out of the Government saw as an inevitable result of the hearings a sweeping reorganization of the Maritime Commission's internal structure, the possibility of eventually only three commissioners, and a definite brake on the building of new vessels.

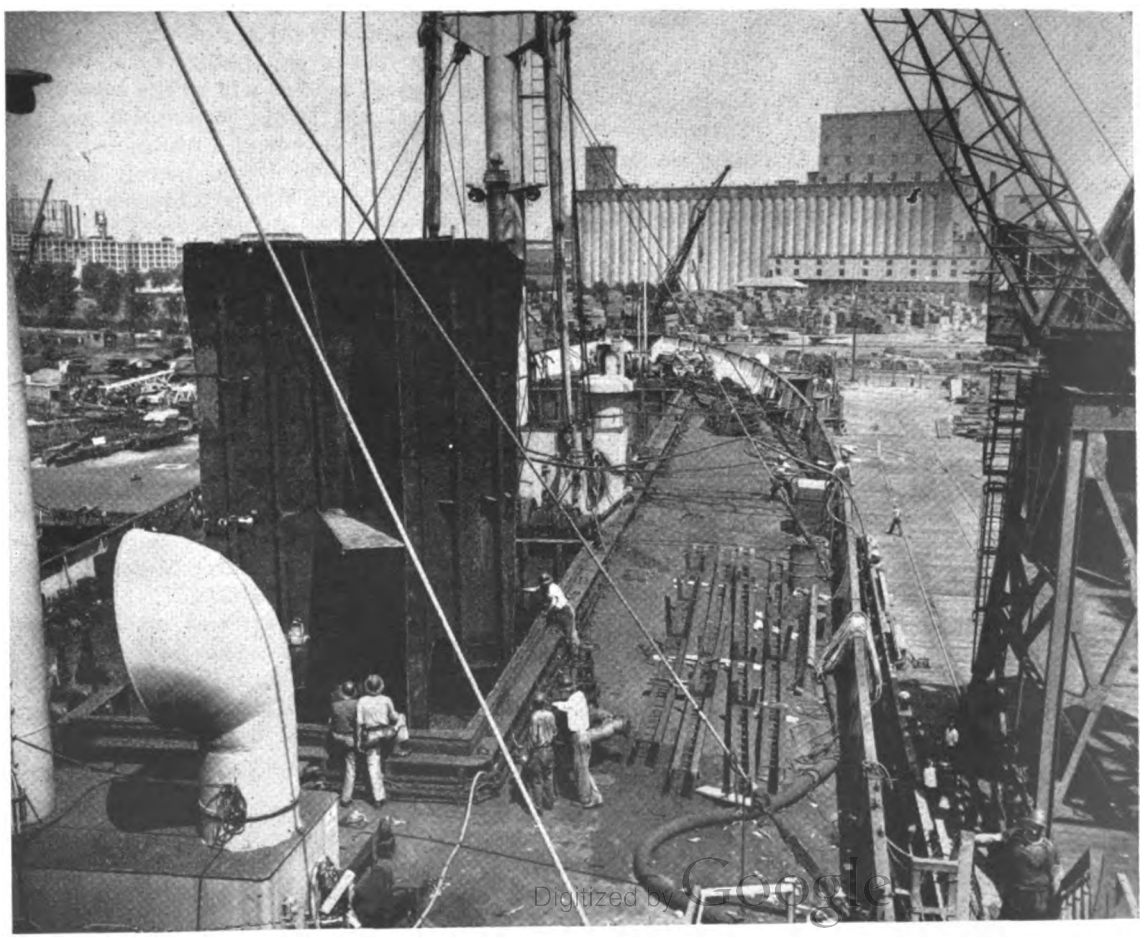
Regardless of the outcome and that some officials felt General Fleming had

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FROM A TANKER TO CARGO CARRIER . . . This is how the tanker "YANKEE PIONEER" looked shortly after work began to convert her from an oil tanker to a cargo carrier at Todd's Brooklyn shipyard.

A dockside mobile Gantry crane is lifting a 25-ton segment of cargo tank out of the No. 2 hold, from the bulkheads of which it has been burned away. Six such sections, as well as tank tops, manhole covers, ladders, piping, valves, etc., have to be sheared from the vessel's five holds as the major step in converting it into a standard Liberty cargo vessel.

Two similar conversions have been performed by Todd's Hoboken Division on the THOMAS F. CUNNINGHAM, Prudential SS Co., and the WESTPORT, owned by Blidberg, Rothschild.



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MSTS TO USE CIVILIAN CREWS, YARDS; BY-PASS CHANDLERS

BUT THE LOG PREDICTS WITHIN A YEAR TRANSPORTS WILL BE MANNED BY NAVY AND REPAIRS SHIFTED TO NAVY YARDS

The newly created Military Sea Transport Service, under the direction of Vice Admiral William Callaghan, USN, is well on its way to absorbing the ocean-going vessels of the Army Transport Service. The unification of Army and Navy overseas transport was ordered by Defense Secretary Johnson with a deadline for completion set for April 1, 1949. (See The LOG for September.)

This transfer of Army functions to the Navy, part of the overall unification of the military services, has posed several problems to the commercial maritime industry, especially where the Army made substantial contributions to the marine activities. It was the practice of the Army to send all ships to private yards for repairs and to purchase supplies locally through chandlers and jobbers. On the other hand, the Navy has accomplished most of its repairs in the government-owned Navy Yards and has procured supplies through its central purchasing procedures, buying vast quantities from the manufacturers direct and warehousing them at central depots until needed.

In an exclusive interview with The LOG Admiral Callaghan revealed that the Navy intends to continue the Army practice of effecting repairs at private repair yards. There was some confusion over this at first since the new Secretary of the Navy appearing before a Congressional appropriations committee, had stressed the savings in repairs which would be possible through this unification by doing the work in Navy yards. However, the Secretary was not aware of the stated policy of the Joint Chiefs of Staff that repair work should be allocated to private yards in sufficient quantity to maintain them as a national defense asset.

Admiral Callaghan stated flatly that repairs to Naval vessels falling within the classification of transports, similar to those acquired from the Army, will be made in private yards. He did, however, make the reservation that this was not to be construed as irrevocably committing the Navy to follow this practice in every instance. For the present, at least, the commercial ship repair yards can expect the bulk of the Military Sea Transport Service's work.

Local Suppliers Squeezed Out

The plight of the ship chandlers and manufacturers' representatives is not so comforting. Admiral Callaghan asserted that the MSTS will be obliged to carry out the buying practices of the Navy, which means by-passing the local distributors and purchasing directly from the manufacturer. When advised that this would work an undue hardship on the local ship supply organizations, Admiral Callaghan conceded the point, but pointed out that the purpose behind the entire unification move was one of economy. He doubted that either the Navy or Congress could be persuaded to alter the regular Navy buying procedure to exempt the MSTS. This will hit the chandlers and representatives hard, especially on the West Coast where a large measure of business originates from the Army Transport Service.

When asked whether or not the MSTS would maintain the same high chartering activity as the Army, Admiral Callaghan indicated that it would. At present their main concern is to take over the functions of the ATS as it is presently constituted. Any further reduction in chartering activities in favor of shipping via berth operators will have to come after the transfer is completed.

Navy Crews Tomorrow?

The MSTS has gone on record as planning to make it a practice to employ civilian crews and has given the unions assurance that this will be the case. When asked if the Navy would use its own crews in the event of a protracted strike, the MSTS chief would merely say that the Navy could not possibly man all the chartered ships with Navy crews without seriously crippling the fleet. It is unlikely that the Navy would use such tactics without direct orders from the White House. However, the transports will prove another matter.

In the long history of the Navy no Naval vessel has ever put to sea with a civilian skipper. When the Navy took over the AMERICA Captain Giles Stedman, then her master, was reduced to the rank of commander and a Navy skipper placed in charge. Captain Harry Manning, master of the WASHINGTON at the time the Navy took over, was made a navigating officer and a new Navy skipper shipped. The Army Transports which the MSTS is now taking over have some excellent skippers, but unfortunately not many of them were brought up on *Lovette*.

Therefore, The LOG predicts that within a year after MSTS takes over, every regular transport will be under the command of a Naval officer. This can easily be accomplished by requiring the present masters to take Navy physicals and other Navy tests which they might fail. They could also be required to go on active duty and then judiciously be transferred, or be offered a rank which they would not accept. With a Navy skipper in command the civilian crews will not last long. Also, the Navy will be able to make out a sympathetic case before Congress, since officers and crews are only performing their line of duty in operating ships. The Army had good reason to use civilian crews—Army officers are not seamen. Naval officers are.

The LOG further predicts voyage repairs and other repairs will soon by-pass the private yards. The commercial ship repair yards will only get this business when it is evident they will go out of business without it. The Navy will neatly accomplish this by carrying out the bulk of its repairs in the Pacific at Hawaii and other bases were it maintains the facilities. It will also divert repairs to East Coast Navy Yards under the heading of "emergency." Since delaying a transport twelve hours can be called an emergency this gives them a pretty wide scope.

So, unless some clear-cut mandate is forthcoming from Congress which specifically instructs MSTS to effect *all* repairs in commercial yards, purchase *all* supplies through local distributors, and employ *only* civilian merchant marine crews, it seems likely that the MSTS will develop into an exclusively military operation. If active opposition by the maritime industry is to be effective it will have to come fast and hit hard.

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WASHINGTON Report

(Continued from Page 41)

acted hastily in chastising a Congressional committee's counsel, the majority of shipping men here felt the American Merchant Marine had a real friend, as well as a severe critic in the new chairman, and that he would use a strong arm on the helm of shipping in Washington.

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With the arrival of the heavy weather damage season, Bethlehem's ship repair yards are fully geared to serve you fast so that you may maintain your regular sailing schedules as closely as possible.

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SHIP REPAIR YARDS

Boston Harbor	New York Harbor
Baltimore Harbor	Beaumont, Texas
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HYDRODYNAMIC TRANSMISSIONS FOR MARINE DECK MACHINERY

By PAUL E. FORSYTHE*
Western Gear Works
Seattle, Wash.

It was originally requested that this paper be prepared to discuss the basic design of hydraulic torque converters and their application to deck machinery drives. You will note that the words hydrodynamic transmissions have been used in the title. An explanation of this change is consequently in order and is necessary so that there will be no misunderstanding as to the type of transmissions described.

The words hydrodynamic transmissions are intended to describe transmissions which deliver variable output speeds and torques as a result of the use of hydraulic elements whose operations result from the dynamic flow of fluids. The most commonly used elements are hydraulic couplings, torque converters or combinations thereof using oil as the fluid medium for the transfer of energy. These elements may be combined with gears or other mechanisms to comprise a transmission which provides the range of torques and speeds required by the driven machine. This system can be defined as the hydro-kinetic system and is basically different from the hydrostatic system which employs variable delivery, positive displacement piston type pumps and fluid motors.

It is the dual purpose of this paper to review the fundamental principles of design and construction of hydraulic couplings and torque converters and suggest how hydrodynamic transmissions can be more widely applied to marine auxiliary machinery drives.

Almost all deck machines must be capable of smoothly handling a wide variety of loads at from high to low creeping speeds. The anchor windlass must provide heavy chain pulls to break out the anchor and controlled creeping speeds to snug it into the hawse-pipe. Cargo winches and cranes must be capable of continual rapid acceleration and deceleration and must have controlled low speeds for picking up and landing a wide variety of cargo loads. Capstans and mooring winches must provide heavy line pulls at creeping speeds and light line pulls at high speeds. Special heavy duty winches for fishing vessels and work boats are invariably required to provide an unusually wide range of speeds and torques.

Types of Drives in General Use

As long as steam was available for deck auxiliaries marine engineers were seldom confronted with transmission problems. The steam engine is capable of converting its power to either higher speed or pull, automatically and only a simple mechanism is required to enable the operator to start, stop, reverse or have infinite speed control within the capacity of the engine. However, due to the objections to steam piping to deck auxiliaries and the economies involved, the use of steam as a direct source of power has largely been abandoned even on steam propelled vessels. It is seldom practical to install boilers to provide steam for this purpose in either large or small diesel vessels so designers have expended their efforts towards developing other types of drives. It is significant, however, that such efforts have been concentrated upon obtaining characteristics in these drives that are equivalent to those of the steam engine.

Electric motors and controls are the most widely used drive elements at the present time. Direct current motors and controls which provide acceptable operating characteristics are available. Principal objections to their use are the complexity of the control apparatus, type of maintenance required, space required for control panel and resistors and their initial cost.

There are numerous advantages and economies in using alternating current instead of direct current aboard ship and in this case the problem of supplying the desired operating characteristics at acceptable costs becomes much more difficult. With some further development, the use of hydrodynamic transmissions may offer a new approach and possible solution to many of these problems.

Modern high speed light-weight diesel engines have been the principal source of hydrodynamic transmission applications. These drives have been proven very satisfactory on the larger trawl winches, seine winches and work boat applications. Their performance has been equivalent to that of the steam engine for the range of speeds and torques and the smooth application of power. It is not desirable to use internal combustion engines, however, when a number of auxiliaries are to be mounted on deck and other factors such as first cost, maintenance, weight and space must be related to the performance required.

Transmissions whose operations result from the displacement of pistons in cylinders by fluids under pressure such as the variable delivery piston type pumps and motors have been widely used on Naval vessels. These transmissions may be driven by simple continuous running constant speed alternating current motors. They have been little used on commercial vessels due to the high initial cost of equipment, installation and remote controls.

Hydraulic Couplings and Torque Converters

Two types of rotating hydraulic elements which are used in hydrodynamic transmissions result in the so-called fluid coupling and torque converter construction. According to our information the basic ideas for both of these types were conceived in Germany prior to 1906. Considerable development took place in Europe where these two types were applied to ship drives, locomotives, trucks and to some industrial uses.

The fluid coupling is composed of only two members. The driving member functions as a centrifugal pump which delivers fluid to the driven member which functions as a centrifugal turbine. The pump delivers fluid directly to the turbine and the turbine returns fluid directly to the pump. Since there is no third member against which the fluid can react, the coupling is a constant torque ratio system. It can transmit torque from a moving shaft to a slower moving or stationary part but it cannot multiply the torque transmitted and the speed reduction is a result of slip or loss.

The torque converter is composed of at least three members: the pump, turbine and a stationary reaction member. Variations in these designs have been developed and are in general use in which the reaction member is also capable of rotation under certain conditions of operation. A unit of this design, thus may function as a torque converter or hydraulic coupling. It is also possible to vary the configuration of the fundamental members to have sectionalized or multiple stages that could be used in numerous arrangements. It is easy to visualize how such elements in combination with gears and clutches may provide Hydrodynamic Transmissions for Deck Machinery drives where a wide range of torques and speeds must be transmitted or retarded.

The pump element is connected to the driving member which may be an internal combustion engine or electric motor unit providing controlled variable speed, by means of a housing which also contains the fluid in the unit. The turbine is connected to the driven member or output shaft. The reaction element may be secured on a stationary shaft, or mounted on an over-running type clutch,

*Presented at the Third Annual Gearhart Meeting, August 26-28, 1949, Gearhart, Oregon, of the Pacific Northwest Section, Society of Naval Architects and Marine Engineers.

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which allows rotation in the direction of the driving elements but is restrained from rotating in the opposite direction. The fluid circulates from the pump to the turbine to the reaction member which returns it to the pump where the cycle of circulation is repeated. The elements of the converter are provided with curved blading to direct the flow of the fluid in the circuit and thus provide a desired performance at the output shaft of the turbine. The housing is kept fully filled with fluid under pressure by built-in pumps so as to prevent cavitation. A portion of the fluid is by-passed through a cooler to maintain proper fluid temperatures under all conditions of operation.

The functions of the converter can best be described by following the normal sequence of power application. When the driving member is rotating at low speeds the pump element causes a gentle circulation of oil outward through the pump and inward through the turbine which remains stationary because no appreciable torque is transmitted.

As the speed of the driving member is increased so that it rapidly approaches its peak or full load torque, fluid is projected from the pump into the turbine at high velocity. Its flow is altered by the turbine blades and a direct force is exerted on the turbine which is caused to rotate. Fluid is discharged from the turbine in a direction opposite to the rotation of the turbine and pump and is directed into the stationary reaction member. The blading of this member is curved so as to redirect the fluid into the pump in its direction of rotation.

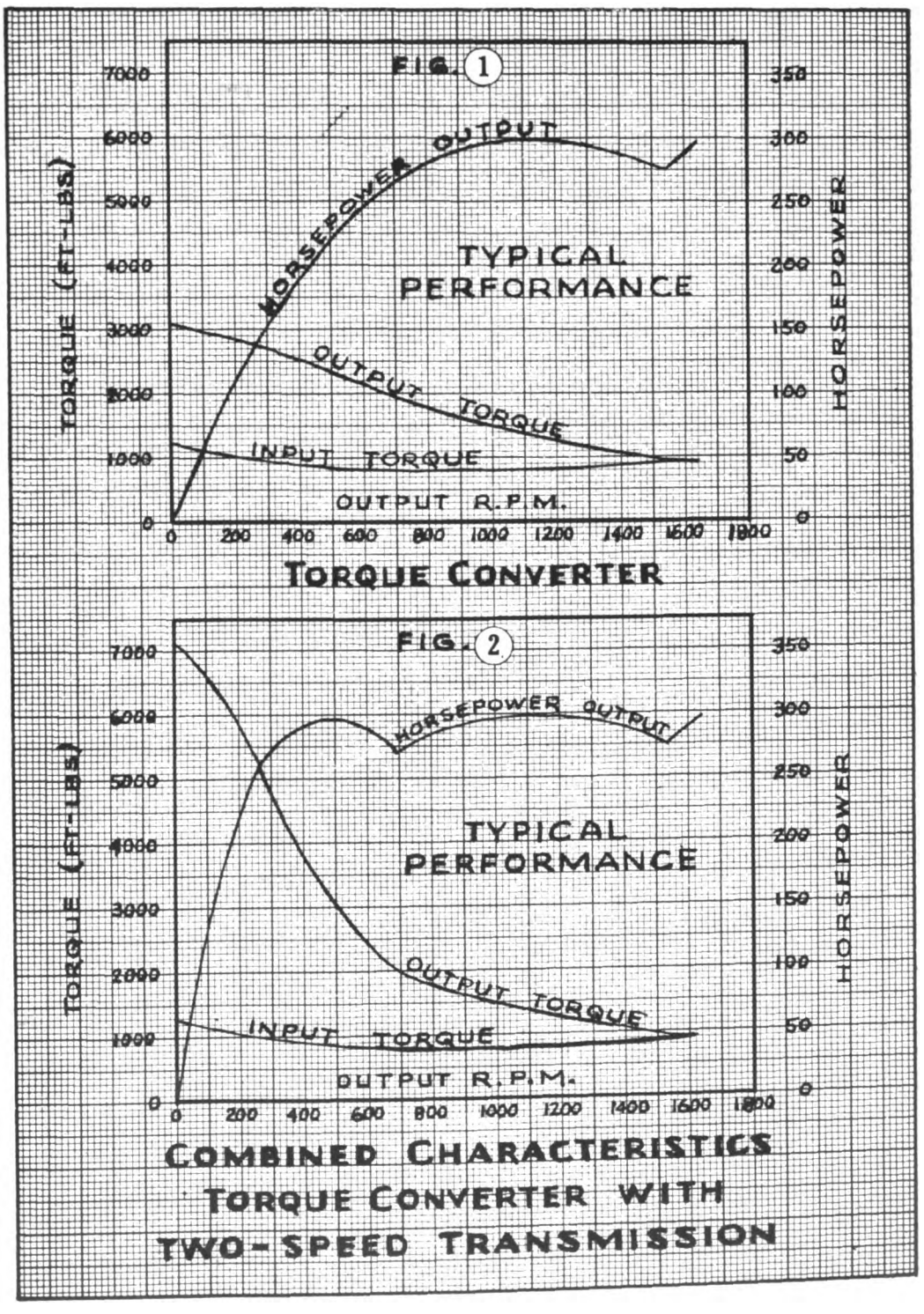
Input torque applied to the pump element enables it to deliver fluid from rest to a certain output velocity. The fluid delivered from the reaction element to the pump has an initial velocity in the direction of pump rotation and serves to increase the mass of fluid delivered by the pump even though the input torque remains the same. Thus a greater mass of fluid is delivered to the turbine, increasing its output torque in direct relationship to the increase in output capacity of the pump.

The extent of torque multiplication at the output shaft depends to a large extent upon the blading design and is at a maximum when the output shaft is held stationary. As the load is reduced and the output shaft rotates, the torque multiplication and losses will drop until a speed ratio is reached where the losses are a minimum for that particular design of converter. Properly designed and applied torque converters are capable of operating over an infinite range of speed variation and a torque multiplication up to approximately three in the single stage design and five in the multi-stage design.

As the output load decreases and the turbine speed increases a condition is reached where there is no reaction at the stator from the fluid delivered by the turbine. In fact, the fluid commences to impinge on the back side of the stator blades and torque multiplication has ceased. If the output load is further reduced the output speed increases and if the stator is held stationary the losses may increase rapidly due to turbulence. If, however, the reaction member is mounted on an over-running type clutch or brake and is thus free to rotate in the direction of the pump and turbine, it may do so at this stage and the converter now functions as a fluid coupling transmitting torque at a 1 to 1 ratio. The unit is thus able to operate at slightly less than 1 to 1 speed ratio with negligible losses.

Hydraulic Coupling Selection and Performance

The hydraulic coupling is not capable of torque multiplication and must be applied in conjunction with other mechanisms which provide the range of torques and speeds required to meet the specifications of the drive. However, their application with such prime movers as internal combustion engines and electric motors makes the drive more flexible in operation and overcomes many of the problems related to inadequate starting torque of the prime mover or excessive current at starting speeds. The ability of the hydraulic coupling to transmit full input torque enables an engine or electric motor to rotate at the speed at which it develops its maximum torque regardless of the speed of the coupling output shaft. This prevents stalling of the engine or motor and introduces a time element which provides for full utilization of the torque capacity of the prime mover. Although the coupling will heat if stalled or operated at excessive slip for an extended period, a properly selected coupling will enable electric motor thermal protection to function or other provisions made to correct the load



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condition before the coupling becomes overheated.

The smooth application of power and the cushion effect of the hydraulic coupling protects the mechanism of the prime mover and the driven machine. In many instances this characteristic makes it possible to use a smaller prime mover and a lighter and more compact driven machine thus reducing first cost as well as operating cost.

Complete performance data on hydraulic couplings is readily available and a study of this material along with the characteristics of the prime mover enables the designer to select the size of coupling best suited for the application and to accurately predict the performance of the driven machine.

There are many opportunities for the application of hydraulic couplings with constant speed across the line starting electric motors for anchor windlasses, capstans and winches on fishing vessels and work boats. Controlled speed regulation is not always necessary on this type of equipment and the coupling provides a simple, reliable fluid drive that offers many advantages. It should be mentioned that inasmuch as coupling vanes are radial, performance characteristics are identical in either direction of rotation so they may be applied for reversing service.

Hydraulic Torque Converter Selection and Performance

Hydraulic torque converters are the most versatile element of hydrodynamic transmissions thus far developed. They provide the shock absorbing, torsional dampening and torque transmitting features of the hydraulic coupling. In addition, they are capable of multiplying input torque as required by loads which are changing moment by moment. The consequent balance of output torque and speed is accomplished automatically and without mechanical contact between rotating parts, electrical contacts or changes in relationship of parts. Power is applied in a steady uninterrupted flow while the load is being accelerated or decelerated and abrupt changes of speed and attending shock loads are eliminated.

If the input speed of the converter can be varied at will by the operator then the speed of the load can be infinitely varied within the capacity of the drive. It may be suspended motionless in mid-air or eased gently and accurately up and down. When starting a load from rest, the prime mover may be brought up to speed quickly due to low initial torque requirements and the load will be accelerated as rapidly as the power allows without further attention by the operator.

Although the fundamental elements of the converter are simple, the combination of stages, blading, circuit shapes and the introduction of mechanical elements provides great diversity of design and performance. It is an important point that each size and type of converter is designed for a certain range of operating conditions and that these should not be exceeded in the interests of satisfactory performance. The speed reduction mechanisms between the converter output shaft and the driven machine should be selected to enable the converter to operate in the center of its peak efficiency range under average operating conditions.

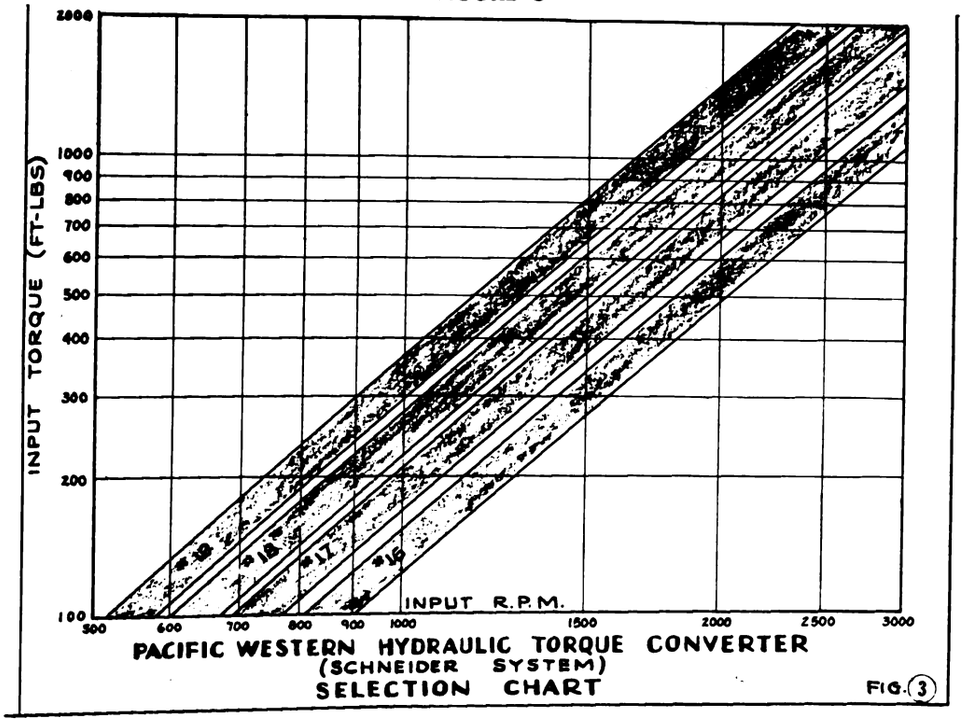
Output performance of a given converter will vary as the speed-torque characteristics of each prime mover with which it is used. It is necessary to develop such data for each combination in order to evaluate its application. Fig. 3 illustrates a simple type of chart for preliminary selection of size of one type of converter.

Fig. 1 shows output torque and horsepower curves for a high speed diesel engine and torque converter drive. Fig. 2 shows curves for this same drive with the addition of a gear transmission beyond the converter. This transmission is of the type that shifts instantly under load and extends the torque-speed range of the drive as illustrated by the curves.

Marine Deck Machinery Applications of Hydrodynamic Transmissions

Numerous applications of hydraulic couplings with both electric motor and diesel engines have been made on a variety of deck machines with very satisfactory results. However, only a few torque converters have been applied and these have been limited to diesel engine drives. We have no knowledge as yet of any applications of hydrodynamic

FIGURE 3



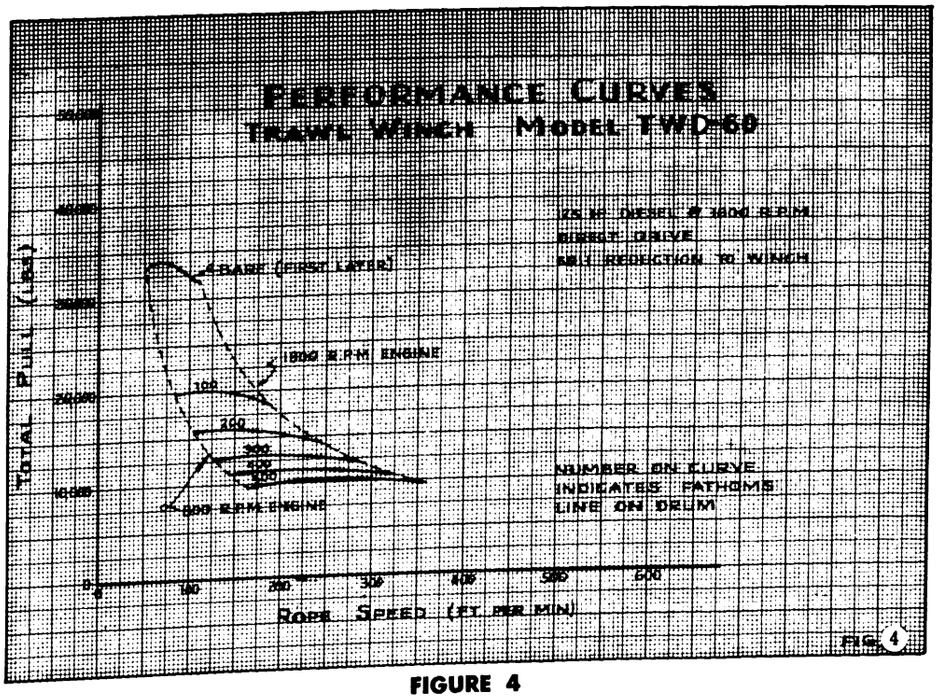
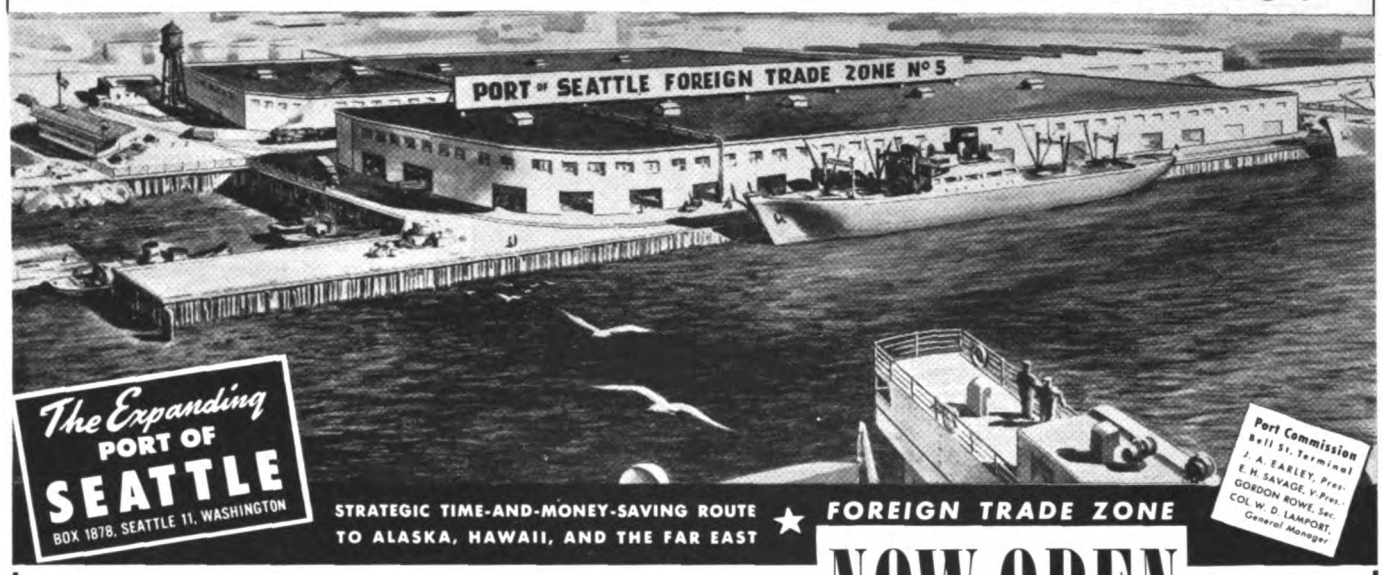


FIGURE 4

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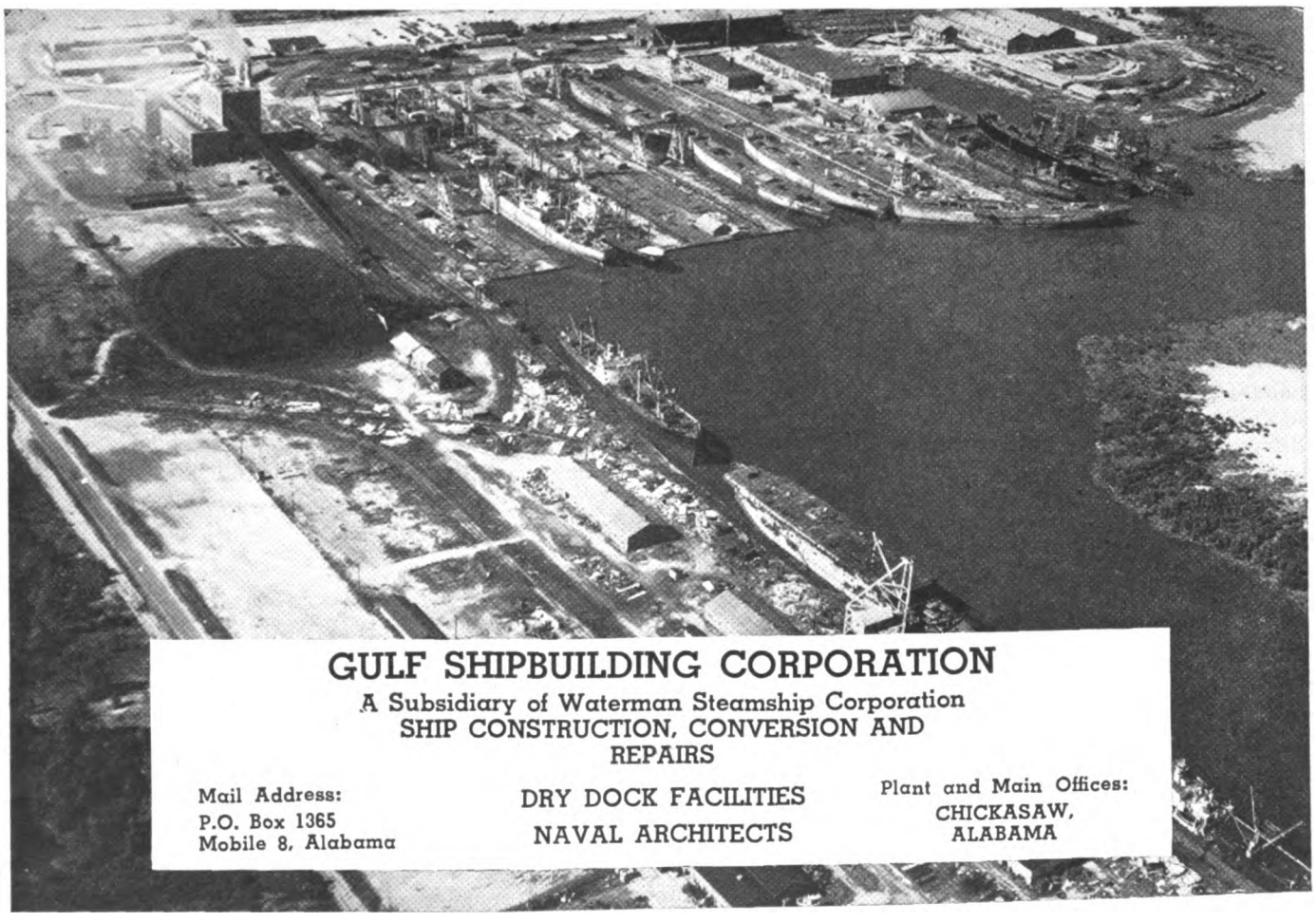
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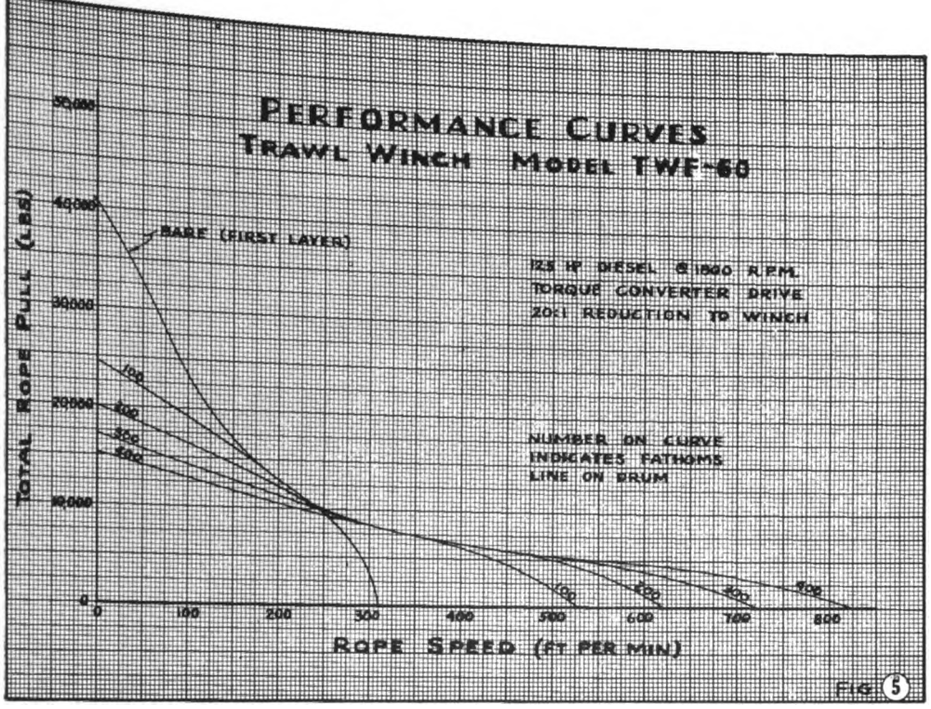


FIGURE 5

transmissions combining hydraulic elements with other speed changing mechanisms to provide drives with characteristics comparable to those now being widely applied in the industrial and automotive fields.

Torque converters have been applied with considerable success on double drum winches on beam trawlers. Figs. 4, and 5 show performance curves for diesel engines only, variable voltage controlled direct current electric motor and diesel engine-torque converter drives for a typical winch with a capacity of 400 fathoms of ⅞" wire rope on each drum. Effective trawl winch operations require that continuous line speeds be maintained from bare to full drum when hauling in the net and that heavy line pulls at creeping speeds be available for landing the catch on the deck of the vessel. The narrow range of pulls and speeds obtained with the direct drive is obvious from examination of the curves, Fig. 4. The size (considering the generator requirements) and performance of the direct current and diesel-converter drives compare favorably as far as operating range is concerned. However, this type of electric drive requires a separate and special motor-generator-exciter set at a considerably higher first cost. The torque converter provides extra features that are not available with the other drives that materially improve the performance of the winch. In addition to infinitely variable control of line speeds, the converter system is capable of operating continuously at stalled output producing line pulls from zero to maximum without stalling or overloading the prime mover. It is thus possible to drag the net against the converter instead of the drum brakes and maintain a constant line pull where desired. The ability of the converter to cushion the loads and smoothly apply the power to the winch is an important factor in safeguarding the fishing gear and protecting the catch.

An interesting example of the value in the ability of the converter to operate in a stalled condition was brought to our attention not long ago. A vessel equipped with a converter driven winch broke her mooring lines during heavy weather. The winch lines were made fast and she rode the storm out against the converter which performed as a constant tensioning device.

This incident suggests the application of converters to mooring winches and deep sea towing winches where it is desirable to pay line in and out while maintaining a constant tension.

Torque converter drives have been used to advantage on salvage winches where it is often desirable to maintain varying line pulls at stall over long periods of time.

The problem of providing line pulls up to 40,000 lbs. and speeds from zero to 600 FPM for a tuna purse seine which was solved by the use of a diesel engine-converter and two speed gear transmission of a type which can be shifted under load.

There are numerous deck machinery drives where internal combustion engines are desirable as a direct source of power. There are a number of hydrodynamic transmissions already in use or now under development for industrial and automotive applications which can be applied to such drives, either directly or with slight modifications. However, the economies and many other advantages in the use of alternating current aboard both large and small vessels dictates the necessity of the further development of hydrodynamic transmissions for use with squirrel cage induction type motors. The proper combination of these elements may provide drives which more nearly approach constant horsepower output, or in a general statement: do work at a constant rate over a wide speed range with the smallest prime mover that will do the job. The transmission can provide torque multiplication to handle heavy loads at low speeds and light loads at high speeds, and because of its hydraulic elements, provide the further advantages of infinite speed control and smooth application of power.

Design studies of drives of this type are now being made and interesting developments may be expected in the near future. Characteristics of the torque converter are ideal for hoisting of loads as required of anchor windlasses, cargo winches and warping capstans. Transmissions can provide a means of harnessing the forces which are available from the torque converter to control the lowering of heavy loads at low speeds and light loads at high speeds in an equally satisfactory manner and thus meet all the requirements of the load cycle.

Summary and Conclusions

It may be concluded that the majority of marine deck machines are required to produce a wide range of speeds and pulls. Various types of drives have been developed and used in this service after the steam engine fell into disfavor. These drives have utilized high speed engines or electric motors and suitable transmissions and controls to provide desired performance.

A relatively new group of transmissions, known as the hydrodynamic type, utilizing hydraulic couplings and torque converters have been developed. These consist of hydro-kinetic elements in combination with mechanical gearing and electrical elements to provide the required range of speeds and pulls.

Hydrodynamic transmissions suitable for use with a wide range of sizes of internal combustion engines are commercially available. They offer many outstanding advantages for deck machinery drives where such engines are desirable as a source of power. A thorough analysis should be made of the characteristics of a given engine and transmission to determine the most effective application.

There are advantages and economies in the use of alternating current as a source of auxiliary power aboard ship. With some further development hydrodynamic transmissions used in combination with induction motors for deck machinery drives may provide improved performance and effect economies in the overall operation of the vessel.

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Note: Figures 1 to 5 inclusive from Western Gear Works Data.

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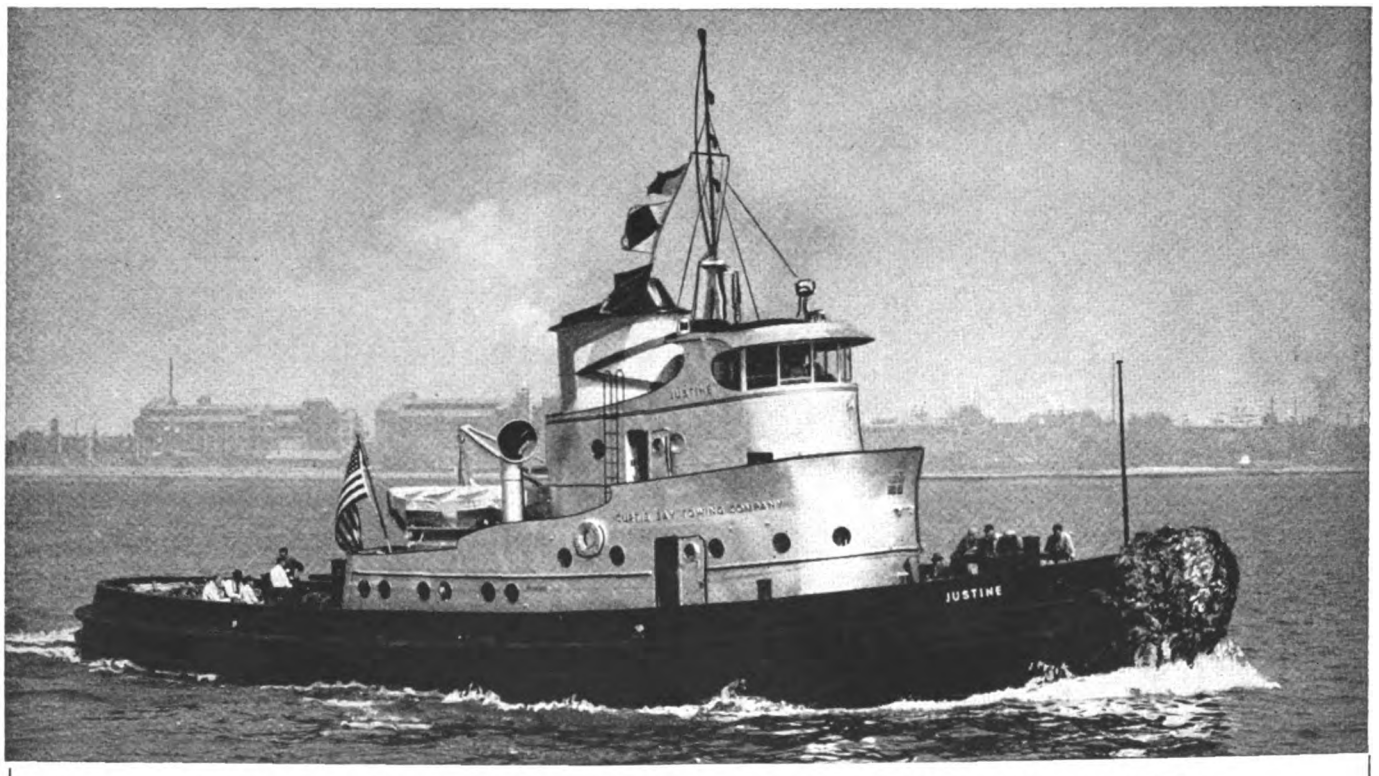
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Cargo Handling Topic of M. J. Gigy at LA Engineers

The Society of Port Engineers, Los Angeles, will hold its first fall meeting October 6th and hear an illustrated talk on cargo handling by Merrill J. Gigy of M. J. Gigy and Associates, San Francisco, representatives of the Lake Shore Engineering Co., Iron Mountain, Mich.

Mr. Gigy will present a colored talking picture titled "Progress in Material Handling," and also a motion picture showing the operation of the "Siporters" on the ss PRESIDENT CLEVELAND, PRESIDENT WILSON and the LA GUARDIA.

The Southern California port engineers Society held a very successful picnic late in August at Abalone Cove.

Crane Company Program for San Francisco Port Engineers

"One can hardly board a merchant ship anywhere without finding a Crane valve aboard," said William T. Toepke of the Crane Company's San Francisco sales staff in discussing Crane valves at the September meeting of The Society of Port Engineers, San Francisco.

Mr. Toepke told of the efforts of his company to keep users of valves, fittings, pipe and allied products fully informed over the years regarding new developments. Much of this information is disseminated through the Crane magazine, "The Valve World," and through their catalogs, he said, and he distributed copies of the journal and also their new No. 49 Catalog. He urged the port engineers to send their valve problems to the Crane Research and Development Division for solution.

Ralph L. Kreiss, also a Crane salesman, cooperated with Mr. Toepke in putting on the program and they took their audience on a motion picture trip through the company's big plant in Chicago with the aid of a talking motion picture: "Life Lines of Industry," which shows every step in the production of piping materials from their design to the shipping of the finished product.

In his talk, Mr. Toepke called the attention of his audience to the catalog pages describing, among others, the new Crane diaphragm valves, the new Crane fluid motor operated valve, special valves and fittings for marine use, Dial-ese trim plumbing fixtures and their brass globe valves with the return to pre-war trim.

After the dinner program, Mr. Toepke and Mr. Kreiss demonstrated Crane fluid motor operator connected to a 10-inch gate valve on a display trailer in the parking lot adjoining Di Maggio's Restaurant, where the meeting was held.

At the October meeting of the San

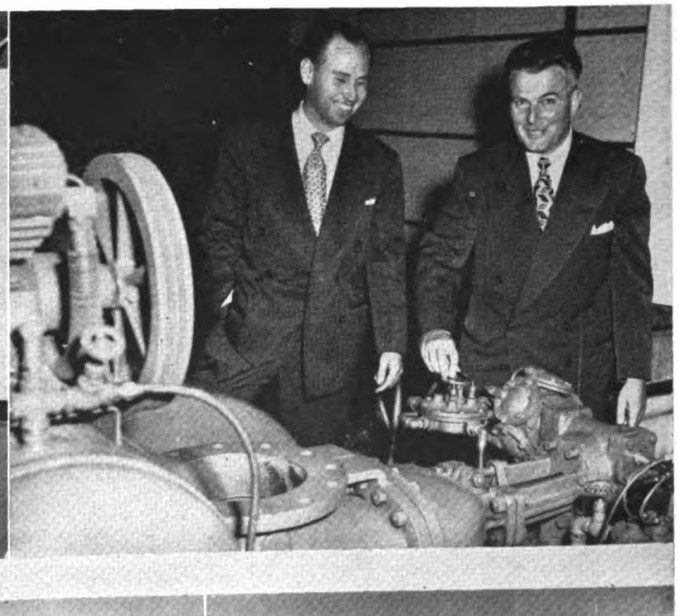
(Continued on Page 62)

LOS ANGELES PORT ENGINEER PICNIC COOKS AND CUSTOMER—Top row, left to right: BERT HALE, Marine Solvents; DICK BARTON, General Electric; DAN DOBLER, Texaco; HAMPTON NEERGAARD, Burns Steamship; GLENN GULVIN, American-Pacific; GEORGE BRADFORD, World-Wide Tankers and PETE PETERSON, Texaco.

SAN FRANCISCO ENGINEERS—Top row, right photo: RALPH L. KREISS and WILLIAM T. TOEPKE, Crane Co. salesmen, demonstrating their firm's new fluid motor operated valve on a demonstration truck at the September meeting of the San Francisco port engineers.

San Francisco Port Engineers—Bottom from left to right: Inspecting the CRANE mobile valve—R. KUHN, Army Transport Service; DICK PARKIN, Westinghouse port engineer; RAY SAMPLE, Matson and JOE BARKER, Moore Dry Dock. BEN OHM of Ohm's Ship Service. BILL PARTRIDGE, new Assistant Port Engineer at San Francisco for Pope & Talbot.











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HOW TO USE FLOODABLE LENGTH CURVES

By E. V. LEWIS
Naval Architect
George G. Sharp

One of the plans ordinarily supplied by the builder with every new ship is a plan showing the curve of floodable lengths. It is proposed to discuss here the significance of this curve as a practical means of determining a ship's ability to withstand flooding under various conditions.

A floodable length curve shows at any position in the length of a ship what portion of the ship could be opened to the sea without causing the ship to sink below the "margin of safety line"—or simply the "margin line." The curve is prepared originally during the design of the vessel as an aid in locating the main transverse watertight bulkheads. But it is also of interest in connection with the completed ship, since a comparison of the length of any hold or combination of holds with the floodable length indicates whether or not the ship would be expected to founder if that portion of the ship were ever flooded.

For example, referring to the figure, the basic curve is the one marked 28′-6″ draft. The point circled indicates that a length of 74.0 ft. could be flooded centered 100 ft. forward of amidships, provided that bulkheads were located to suit. The actual compartment in this vicinity, hold No. 2, is only 60 ft. in length, and therefore under the assumptions made, the ship should survive damage to this hold. The curve drops to a lower level in way of the machinery space because of the different permeability there, a matter which will be discussed later.

The sloping lines are drawn at such an angle that the altitude of each triangle is equal to the length of the hold forming its base. This provides a simple geometrical way of showing whether or not a hold or group of holds is within the floodable length. The numbers of each apex indicate whether one, two or three holds are involved. Comparing the triangles for each hold with the 28′-6″ floodable length curve shows that any one of the holds could be safely flooded. However, the only case in which more than one can be flooded at this initial draft, is the combination of fore peak and No. 1 hold.

Assumptions Made

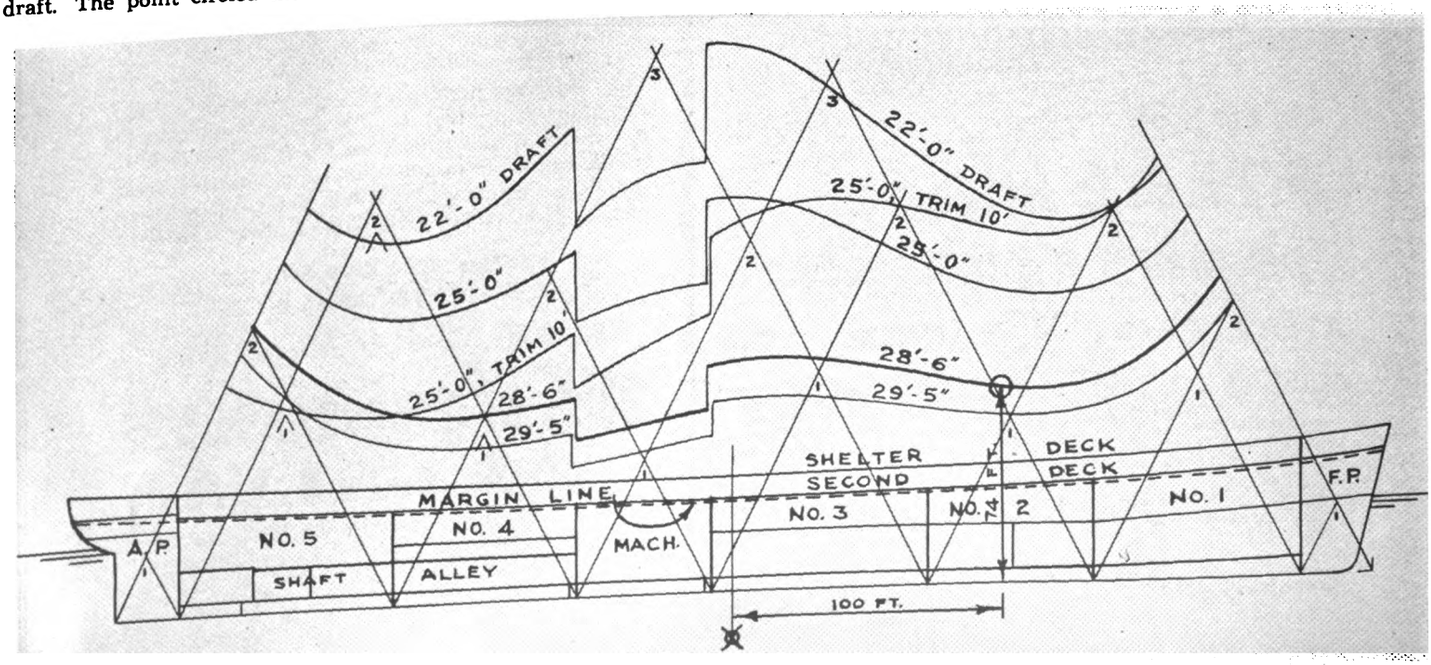
It is important to remember that certain assumptions have been made in arriving at floodable length curves such as the basic curve show in the figure, and that departures from these assumptions may change the picture entirely in an actual case of damage to the ship.

It has happened more than once that a ship has been unnecessarily abandoned, possibly because the flooding curve showed it to be only a "one-compartment" ship, i.e., it could be expected to stay afloat with no more than one compartment flooded. Actually, because of a favorable combination of draft and of stowage and type of cargo before the collision, "one-compartment" ships have stayed afloat and been brought into port when damaged in two adjacent compartments.

The following are some of the assumptions made in standard flooding calculations:

1. Seas are calm, so that no freeboard is required.
2. Watertight bulkheads are really watertight with all doors closed, no leaks, etc.
3. Transverse stability is satisfactory.
4. Ship is initially at full load draft, on an even keel.
5. Permeability is .80 in machinery space and .63 elsewhere.
6. Double bottom is completely flooded.

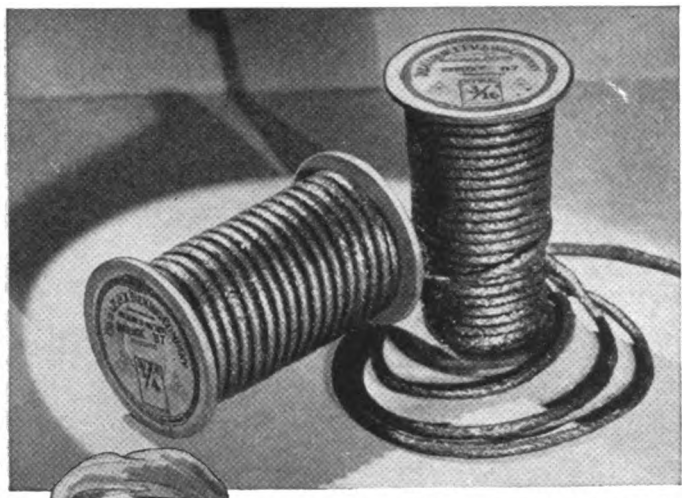
The first two points are obvious. A ship which should theoretically stay afloat in still water might easily be lost in heavy weather. Likewise if the bulkheads which are assumed to be watertight are for any reason not actually watertight, the flooding may be unnecessarily increased in extent.



FLOODABLE LENGTH CURVES- C3 CARGO SHIP

PERMEABILITIES: MACHINERY SPACE .80; ELSEWHERE .63.

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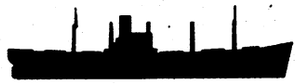
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OPERATING IDEAS



FOR MARINE SUPERINTENDENTS, PORT ENGINEERS, PORT CAPTAINS, AND OTHER OPERATING EXECUTIVES

The next two points will be discussed here, but the last two dealing with the effect of permeability and intact double bottom will be dealt with in next month's article. However, the meaning of permeability should be stated here. When the holds are full of cargo, the volume of water which can enter them is considerably less than would be the case if the holds were empty, even though water soaks into the cargo and fills the spaces between bales, boxes and other containers. The ratio of the volume of water that can enter a space to the gross molded volume is the permeability. The values given above are good average figures, but actual cases may differ appreciably one way or the other. Machinery space permeabilities, on the other hand, do not vary greatly from the figures given.

Transverse Stability

The floodable length calculations deal only with the sinkage and trim, and therefore, in using the floodable length curve the question of transverse stability must be overlooked. Even though a study of the flooding curve indicates that the ship should stay afloat in a given condition of damage, the ship would still be lost by capsizing if the stability were inadequate. This subject has been discussed in previous articles. (The Log, Sept. and Oct. 1948.)

Effect of Draft and Trim

The accompanying figure shows the effect of draft on the floodable length for a typical C-3 ship. The following curves are shown for the ship initially on an even keel:

28′-6″ draft, which is the designed full load draft,

29′-5″ draft, which is the maximum draft obtained on some C-3's after reassignment of freeboard,

25′-0″ draft, with less than full cargo,

22′-0″ draft, with approximately half-cargo.

All of the curves are based on standard permeabilities, as discussed above. The first curve is the only one, however, which is normally shown on the flooding plan supplied with the ship.

By comparing the four "even keel" curves, a number of interesting conclusions can be reached. For example, it can be seen that at the increased draft of 29′-5″ the ship is no longer a one compartment ship, for holds 3 and 4 are both longer than the floodable length. On the other hand, at a draft of 22′-0″ the ship meets a two-compartment standard throughout, except for the combination of holds 4 and 5. Even the latter combination meets it for all practical purposes when a correction is made for the buoyancy gained when the shaft alley remains intact. The corrected lengths for these holds are indicated by inverted V's on the diagram. In the case of holds 2 and 3 plus machinery space, a 3-compartment standard is almost achieved at 22′-0″ draft.

It can also be seen that a comparatively small decrease in draft causes a large increase in the floodable length. Hence, provided that the permeability does not change, the lighter the ship, the safer it is. However, at lighter drafts there will generally be less cargo and accordingly there will be more space available in which water can enter, i.e., the permeability will be higher. This effect will in most cases partially offset the gain due to draft, as will be seen next month.

In order to demonstrate the effect of initial trim on the floodable length, a curve has been drawn in the figure for the ship at 25′-0″ draft with a trim of 10 ft. by the stern. This shows that trim by the stern reduces the floodable length aft and increases it forward. This results from the fact that the greater draft aft and lower freeboard leaves much less reserve buoyancy available in case of flooding. A similar effect will be found at other drafts.

In conclusion, the floodable length curve can be a valuable guide in determining the behavior of a ship in case of damage, but it can be properly used only with a full understanding of the assumptions on which it has been based.

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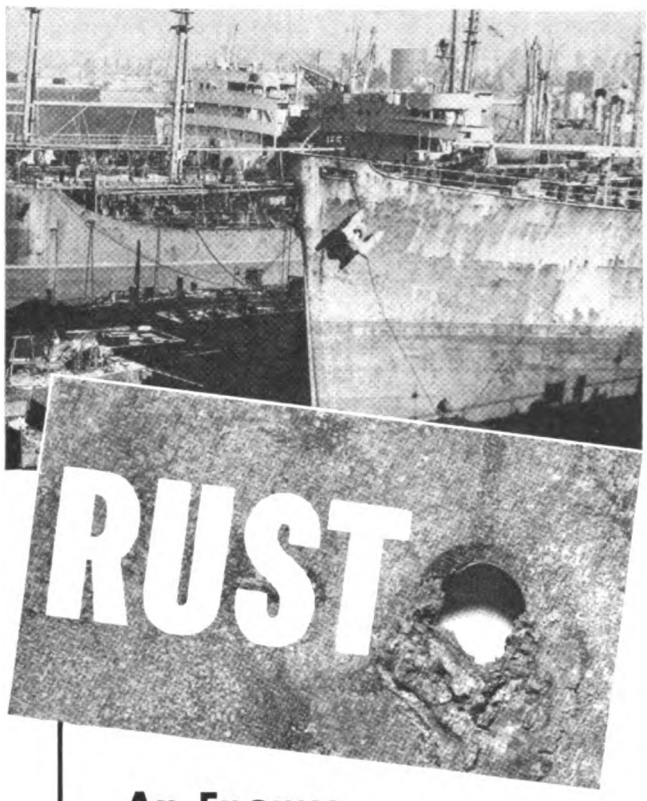
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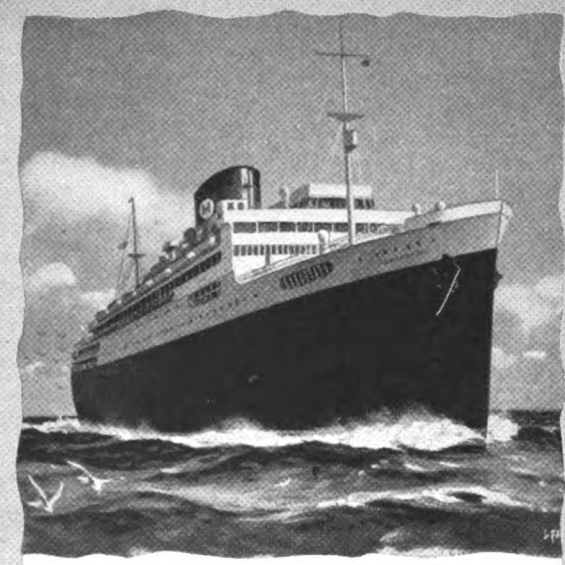
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Tramp Shipping

(Continued from Page 39)

commerce was carried by tramp vessels, the majority flying the American flag. This phenomenon was caused in large measure by the efforts of the United States to assist in the rehabilitation of war-torn areas, especially Europe, and the fact that the United States had relatively little competition from foreign flag vessels.

3. The national policy of the United States is to carry in American flag vessels, in addition to all domestic water borne commerce, at least half of our foreign commerce. This standard is of overriding importance both because we should not again face the possibility of future wars dependent upon the tonnage of friendly powers and because we have undertaken immense international commitments in the economic and political spheres. Moreover upon shipping must fall the burden both in peace and war to provide the tonnage to carry a substantial part of United States exports of bulk cargoes; affording access to the raw materials of a commercial and strategic character which this country does not produce in adequate quantities; and importing other commodities upon which the United States is heavily dependent.

4. Concentration upon liner tonnage will not enable us to achieve the standard of carrying at least half of our foreign commerce.

5. In order to achieve the standard of carrying at least half of our foreign commerce, we must look in the direction of developing a fleet of tramp vessels under the American flag which will carry a substantial part of the cargoes characteristically moved in tramp vessels.

6. It is estimated that about 200 vessels of speed and capacity suited to tramp operation will be required initially to carry the proportion of tramp cargoes which, it is reasonable to assume, can be won away from foreign shipping if conditions of competition can be equalized.

7. A tramp fleet of this size will also provide the following advantages:

a) The Government will benefit financially both in respect of positive income from sales and in respect of savings of lay-up and maintenance costs.

b) The national defense will benefit to the extent that an operating ship is an incalculably superior military asset over one in lay-up.

c) The national defense will benefit further from numerous moderate sized shipping organizations capable of rapid and efficient expansion in national emergencies.

d) The national economy will benefit through the contributions made by a tramp fleet to the construction, repair, insurance, and other allied industries.

e) The contribution to labor and employment of a fleet of 200 tramp vessels would also be substantial.

f) The availability of a fleet of American flag tramp vessels would have a stabilizing effect on ocean freight rates of bulk commodities, especially when unusual economic or political conditions prevail in the international sphere. This may become an important factor in view of our growing need for the importation of raw materials for commercial and strategic use.

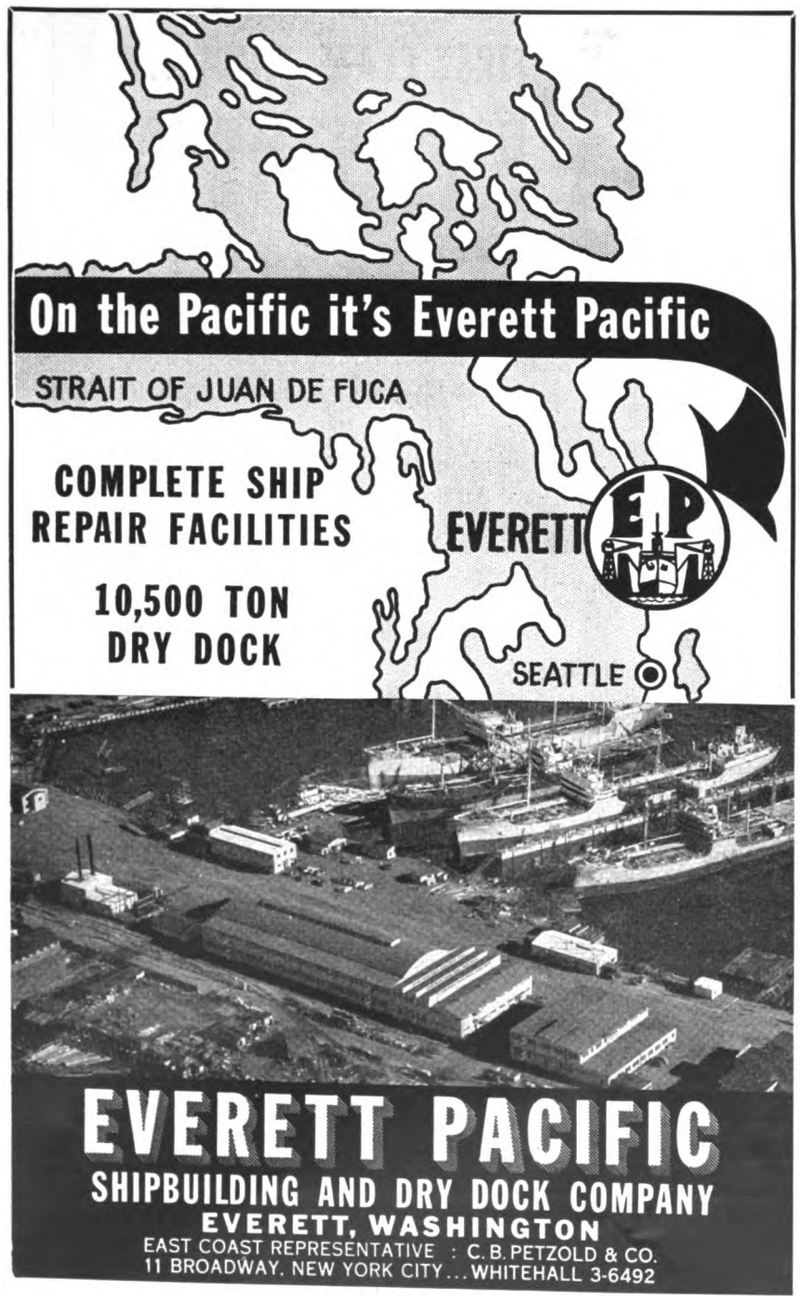
8. It is apparent that no tramp fleet can, over a long term, sustain itself under the American flag, in competition with lower cost foreign shipping, without Government aid.

9. Such Government aid, if granted, conditioned upon the due protection of existing liner operations. Tramp shipping must be considered as complementary to liner operations which continue to be the primary concern of the Government.

10. The form of Government assistance should be parallel to that available to liner companies in foreign trade and should encompass construction and operating subsidies and mortgage aid.

11. The program should not be undertaken without due provision for orderly replacement of tonnage and without the realization that such replacement of tonnage will be impossible over the long course without construction subsidies.

12. The primary form of aid should be an operating differential subsidy designed to place the United States tramp operator on a parity with his foreign competitors.



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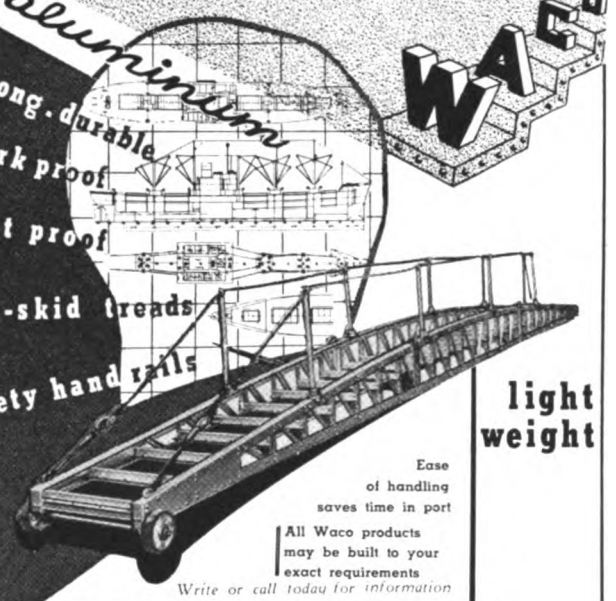
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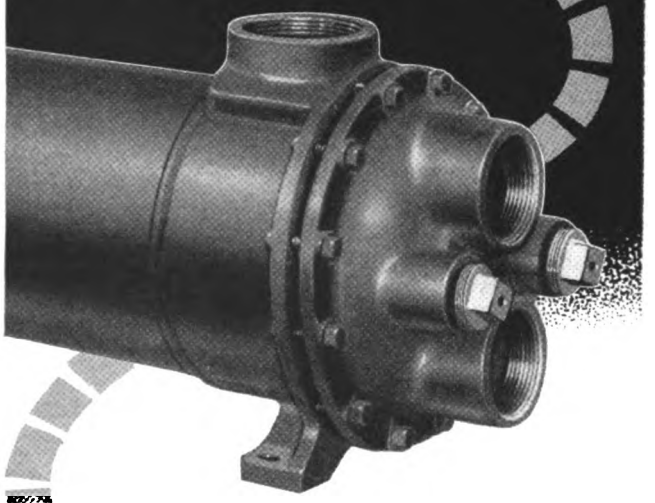
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EQUIPMENTALK

Lake Steamer Converts from Coal to Oil With Todd Burners

The conversion from coal to oil burning of the 7,739-gross ton D & C lake passenger steamer, ss GREATER DETROIT, was performed entirely by the ship's crews and pipefitting contractors under the direction of John Munn, superintendent of D & C in a period of about two months. The job was done under the close supervision and direction of engineers from Todd Shipyards Corporation's Combustion Equipment Division. Todd furnished the oil burners, heating, straining and pumping equipment and laid out the plans for the new fuel oil tanks and piping.

As a coal burner, the GREATER DETROIT had four fire rooms in each of which there were six furnaces, a total of twenty-four in three double-ended and six single-ended Scotch type, Howden forced-draft marine boilers.

In preparation for the installation of the new oil-burning equipment, the grates and furnace doors were first removed, and the coal bunkers were emptied. The special Todd fronts were then adapted to the Howden registers, and Todd diaphragm interior castings secured in the furnaces. The arrangement provides for natural draft operation in port with a light load, and the utilization of forced draft with efficient heated air when under way. Twenty-four Todd "Hex-Press" burners were installed. Two Todd duplex marine type heating, pumping and straining systems, shop assembled at Todd's Combustion Equipment plant in Elmhurst, L. I., were installed to serve two fire rooms each. Four 6500-gal. settler tanks were constructed and placed on either side of these two systems. They were fed from three storage tanks built in the vessel's double bottom directly under the fire rooms, with a total capacity of about 100,000 gals.

It was found that in order to maintain her regular schedule run between Detroit and Buffalo in the desired 16 hours, it was only necessary to use three of the four fire-rooms, or 18 furnaces where, as a coal-burner, all four had to be operated. The fourth fire-room with its six furnaces will now serve as an emergency boiler room, or as a relief when it becomes necessary to service the equipment in the other rooms.

By next season the whole D & C fleet will have been converted to oil.

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Washington Aluminum Appoints Gigy As Agent

Robert Sanford, vice president of Washington Aluminum Company, Washington, D. C., announces appointment of M. J. Gigy & Associates, San Francisco, as Pacific Coast agents for all aluminum marine equipment manufactured in their new plant at Baltimore.

Washington Aluminum Company specialize in the design and fabrication of spark-proof and corrosion resistant fixed and feathering tread accommodation ladders, as well as all aluminum gangways and brow aprons.

According to the company, fixed or feathering tread accommodation ladders can be had in one or two sections, of any required length, with or without platforms, complete with stowage fittings, 180 degrees rotating upper platform, required bridle for handling and shell and dock rollers.

⚓ ⚓ ⚓

Carrier Expands San Francisco Office and Shop

The opening of a new and large San Francisco office and service shop to act as West Coast regional headquarters for Carrier Corporation's marine refrigeration and air conditioning business was recently announced by Leo Starr, Carrier Marine Department manager.

John Kooistra, veteran Carrier engineer, is in charge of the expanded operation, Mr. Starr said. West Coast marine sales, engineering and service will be handled by the office, which is located at 251 First Street in the heart of San Francisco's shipping district. Roy Hosford will supervise service activities. A service shop with an expanded stock of spare parts and accessories is included in the new facility.



ARTHUR D. BRAGG, Pacific District Manager of General Electric Company's Apparatus Department, succeeding ALLEN G. JONES. He formerly was Assistant District Manager of the Apparatus Department and District Manager of the Central Station Division.



WORTHINGTON CHIEFS—l. to r.: HAROLD W. KING, new manager of the San Francisco district office of Worthington Pump & Machinery Co. and JOHN P. McARTHUR, who moves from San Francisco district manager up to the post of manager of west coast sales. Mr. King, with Worthington since 1926, has been a sales engineer in the firm's Seattle office. Mr. McArthur joined Worthington in 1936 at Philadelphia and has been San Francisco manager since 1944. His office is in the Russ Building, San Francisco.

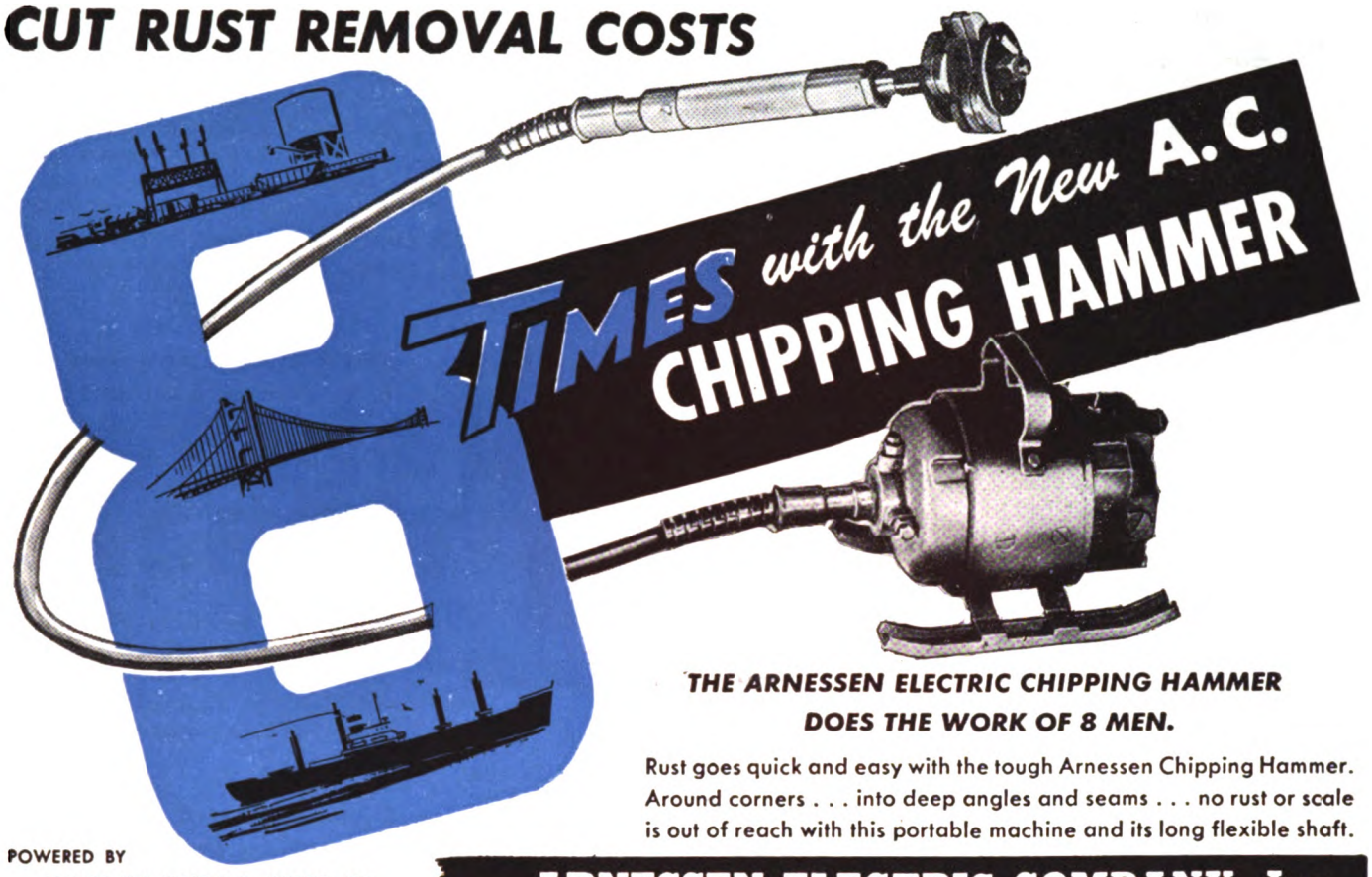




CARRIER CORPORATION'S new West Coast Regional Headquarters at 251 First Street, San Francisco, and JOHN F. KOOISTRA, branch manager.

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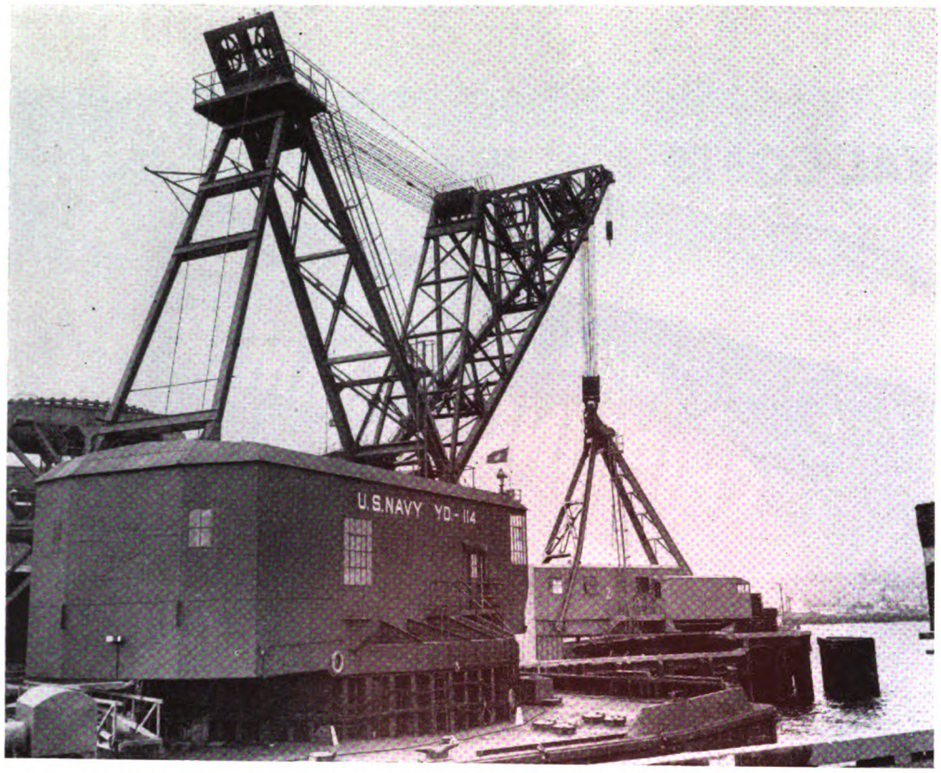
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COLBY CRANE being moved by Navy floating crane at Seattle Port of Embarkation.

Army and Navy Cranes Tangle At Seattle Port of Embarkation

Two giant cranes recently tangled at the Seattle Port of Embarkation. One was a Navy bargetype crane with a lifting capacity of 150 tons and the other a stationary Army crane with a lift capacity of 60 tons.

The Army crane is one of many built and installed by the Colby Crane and Engineering Company of Seattle.

It was all a matter of the Navy crane moving the Army crane from the north side to the south side of Pier 37.

Using the Navy crane, a crew dismantled the Army crane and floated the parts —including base, cab, and boom—to the other side of the pier and reassembled them on wheels. The shift was made to give the crane greater use in cargo operations by having it movable on tracks the length of the pier.

Colby cranes, built by the Colby Crane & Engineering Co., Seattle, are built to operate on straight and curved tracks, according to the company. There is another Colby crane now on Pier 37 North, with a lift capacity of 45 tons. The company reports they have been building cranes for over 30 years and Colby cranes are operating throughout the United States and Canada and in many foreign countries.

⚓ ⚓ ⚓

H. V. Byrnell Opens Survey Office at Vancouver, B.C.

H. V. "Hal" Byrnell has announced his entry into private practice as marine surveyor and consulting engineer with offices at 836 Esquimalt Avenue, West Vancouver, British Columbia.

Byrnell has been superintendent engineer for Canadian Transport Company for the past three and one-half years. The previous two years he was resident superintendent for Park Steamship Company at Montreal and Vancouver. Earlier he served as engineer surveyor for British Corporation Register of Shipping and Lloyd's Register of Shipping, following 28 years spent at sea and shore as mechanical apprentice, chief engineer aboard Canadian Pacific Steamship Company ships and as instructor engineer.

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Felix Billig Continues E. V. Winter Business

Announcement is made by Felix V. Billig that he will carry on the marine manufacturers' representative's business of the Eugene V. Winter Co., 15 Drumm St., San Francisco, following the death of the owner, Eugene W. Winter, August 17, at the age of 46. Mr. Winter's father founded the company more than 30 years ago. Mr. Billig, who has been with the firm 11 years, is secretary-treasurer of the Mariners Club of California. M. A. Kindy will continue with the company.

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Diesel Control Now Operating in Oakland

Pacific Coast Diesel Control, Inc., an affiliate of Diesel Control Corp., Wilmington, Calif., has been established at 128 Myrtle Street, Oakland, to handle fuel injection and governor work. In charge is Henry T. Wiegmann, formerly with the Atlas and Enterprise diesel engine companies. American Hammered piston rings, manufactured by the Koppers Company, are handled by both the Wilmington and Oakland Diesel Control plants.

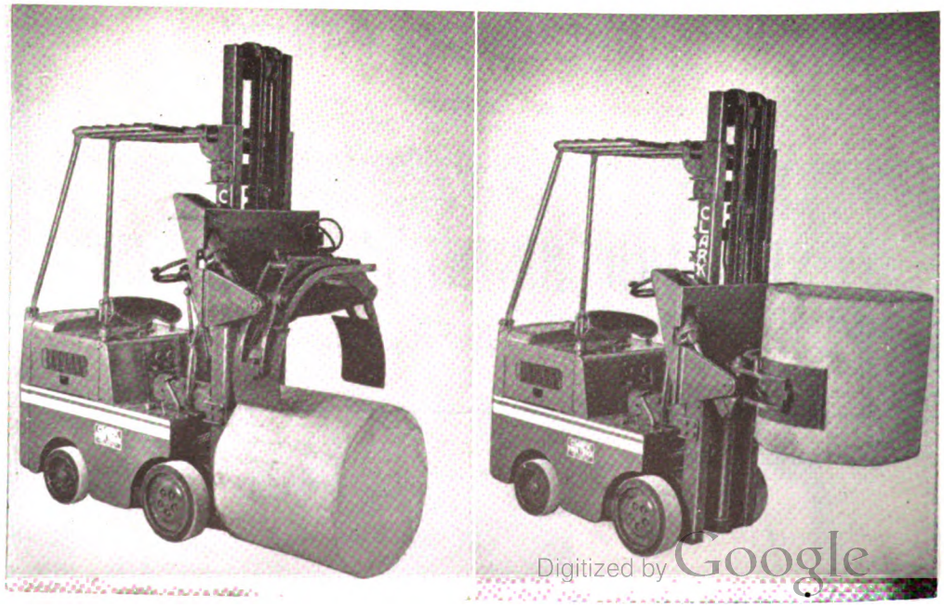
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Don D. Fleming Co., Inc., 1079 Folsom Street, San Francisco, is announced as a distributor for the 3-M marine products of the Minnesota Mining and Manufacturing Co.



JOHN H. SHEUSNER, new Chief Engineer of the Enterprise Engine & Foundry Co., San Francisco. During his five years with the company as chief design engineer, he has been in charge of all new design developments incorporated in the complete line of Enterprise Diesel engines.

TURNING A HEAVY CYLINDRICAL ITEM 90 degrees from horizontal to vertical position is done easily and quickly by using an up-ending device for use with fork-lift trucks developed by Clark Equipment Co., Battle Creek, Michigan. Clark upending device on fork-lift truck of 2000 pounds capacity, in position, left, to handle a 30-inch roll of paper weighing 550 pounds; Paper roll gripped by fork-arms has been rotated 90 degrees to vertical position, right.



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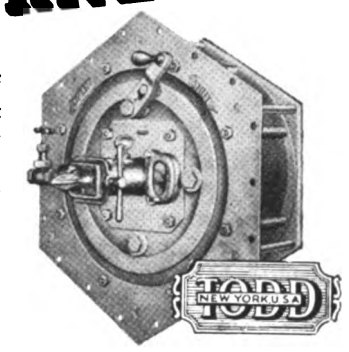
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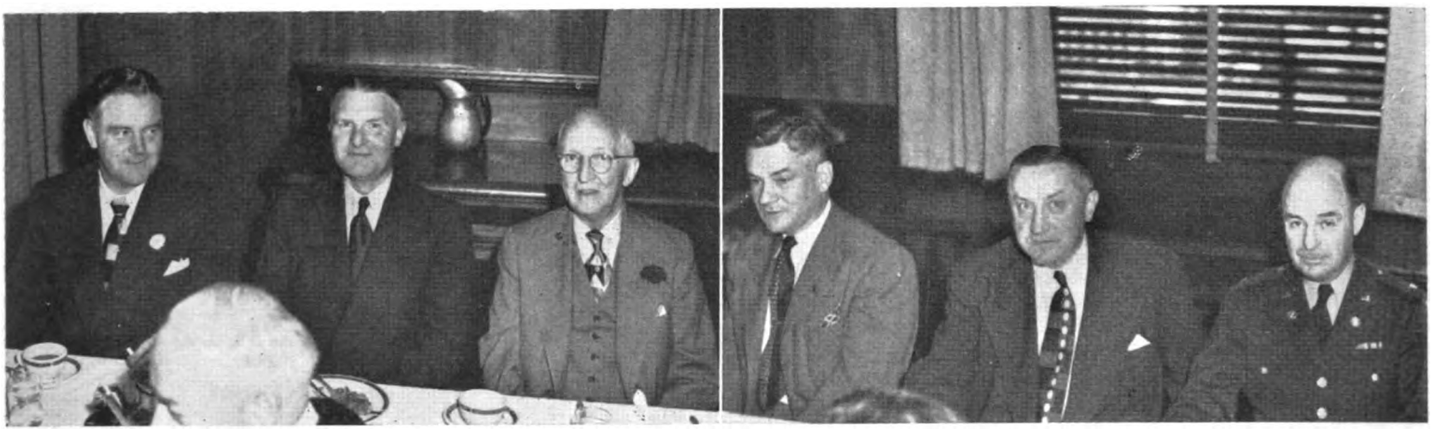
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SAN FRANCISCO RECEPTION FOR NEW PRESIDENT OF RADIOMARINE CORPORATION OF AMERICA—Left to right: E. H. HARMS, Operating Manager of Pope & Talbot Lines and President of the San Francisco Propeller Club; REAR ADMIRAL THOS. P. WYNKOOP, USN, ret., new head of RCMA; G. HAROLD PORTER, retired former Vice President of Radio Corporation of America; HARVEY BUTT, San Francisco, Regional Sales Manager of RCMA; M. A. CREMER, Manager of the San Francisco Marine Exchange; and COL. CYRUS J. WILDER, deputy to General J. A. Lester, port commander, Army Transport Service, Fort Mason, San Francisco.

Jim Hill, president of the California Ship Repair Corporation, Oakland, announces Jim Schaefle as new vice president, secretary and treasurer. Mr. Schaefle was with the engineering department of Matson Navigation Co. for 10 years and served as a trial engineer for the Kaiser Yard No. 3 at Richmond and Bethlehem-San Francisco during the war. James F. Smith has resigned as an officer of California Ship Repair.

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De Laval Publishes New Engineering Handbook

A new edition of the De Laval Engineering Handbook has recently been issued by the De Laval Steam Turbine Company of Trenton, N. J. As a useful reference book the first edition was popular with engineers throughout all industry. This second edition, having been carefully revised, will be even more useful to engineers whose work requires frequent reference to the subjects covered.

The nearly 300 pages of the handbook are sources of practical information on the design, operation and installation of pumps, turbines, compressors and gears.

For reference convenience the several subjects are divided into six main sections:

1. Mathematical, mechanical and fluid information of a general nature applying to more than one of the following—
2. Steam turbine data.
3. Centrifugal pump data.
4. IMO pump data.
5. Compressor blower and exhauster data.
6. Helical reduction gear data.
7. Worn reduction gear data.

The information in the De Laval Handbook was compiled by the engineering staff of the company and edited by Austin H. Church and Hans Gartmann.

Copies of the De Laval Engineering Handbook are available at $2.00 each from the Advertising Department, De Laval Steam Turbine Co., Trenton 2, N. J.

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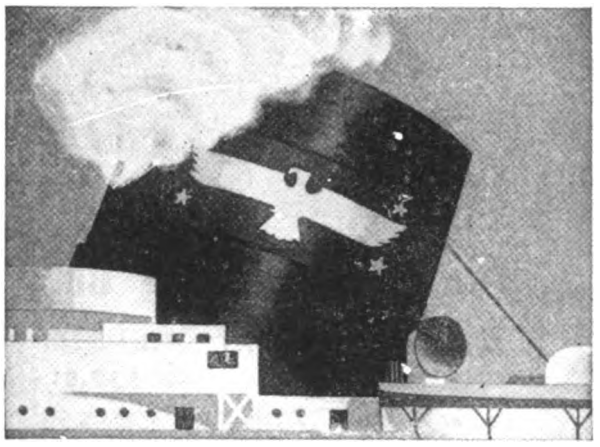
Society of Port Engineers

(Continued from Page 50)

Francisco Society on the first Wednesday of this month the Anchor Equipment Co. will present a program describing the products of the Koppers Company tar products division's Bitumastic anti-corrosive industrial coatings.

A new port engineer at San Francisco is William Partridge, who has been transferred from New York to replace the late Ed Harris as assistant to John Clerico, port engineer for Pope & Talbot. Mr. Partridge has been a port engineer with the Pope & Talbot line at New York since 1945.

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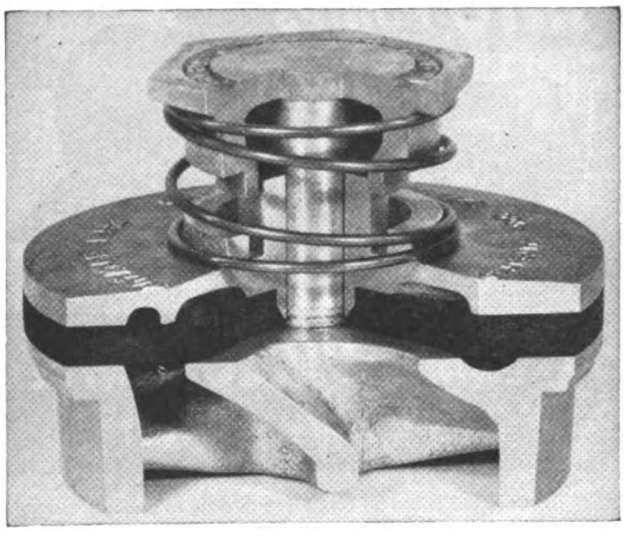
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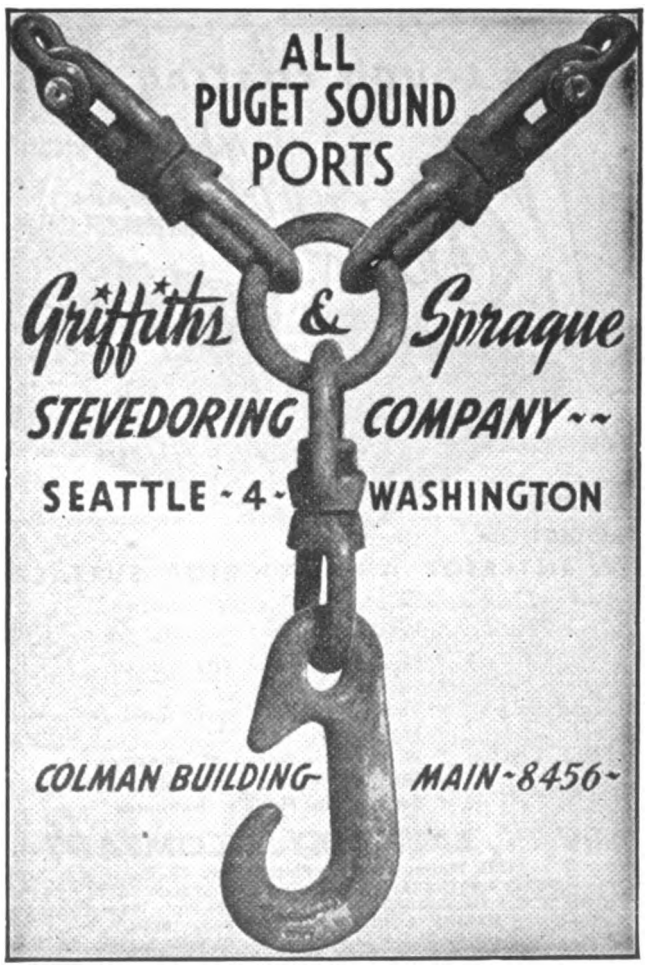
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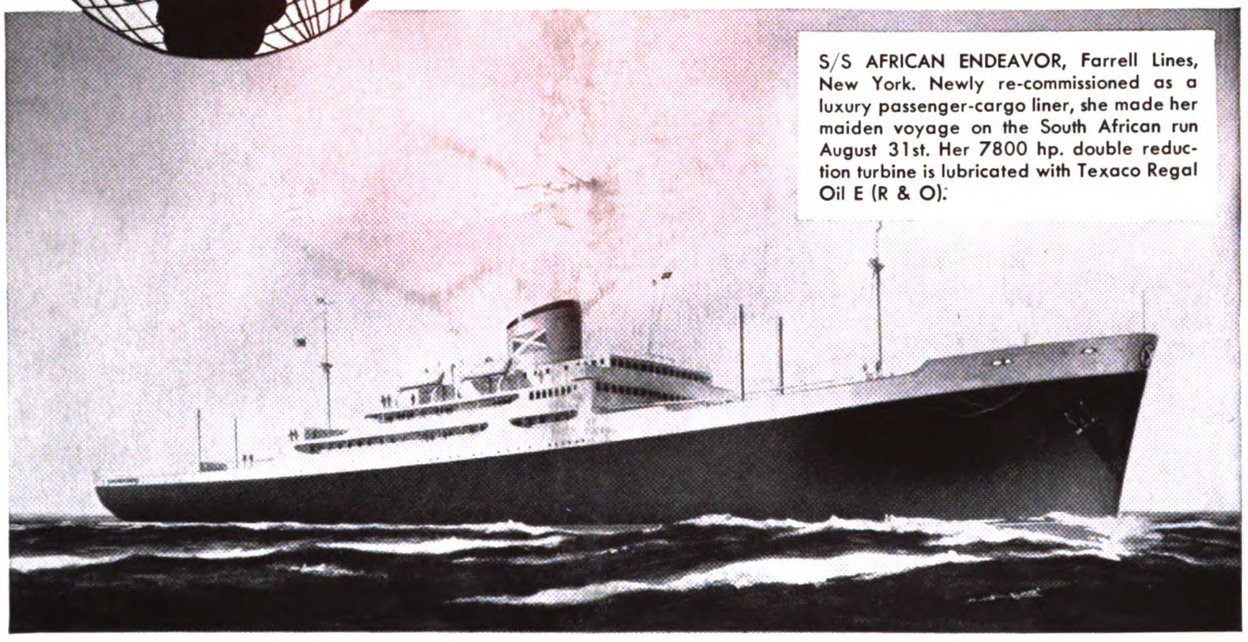
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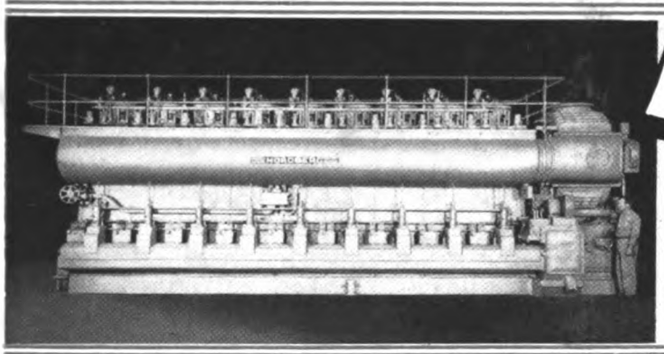
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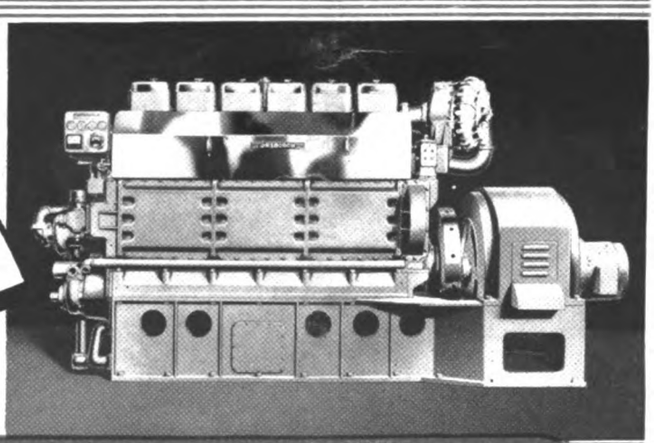
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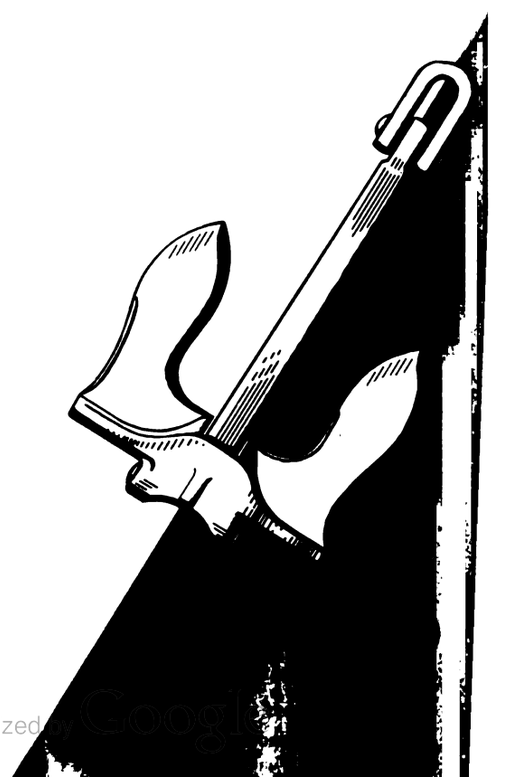
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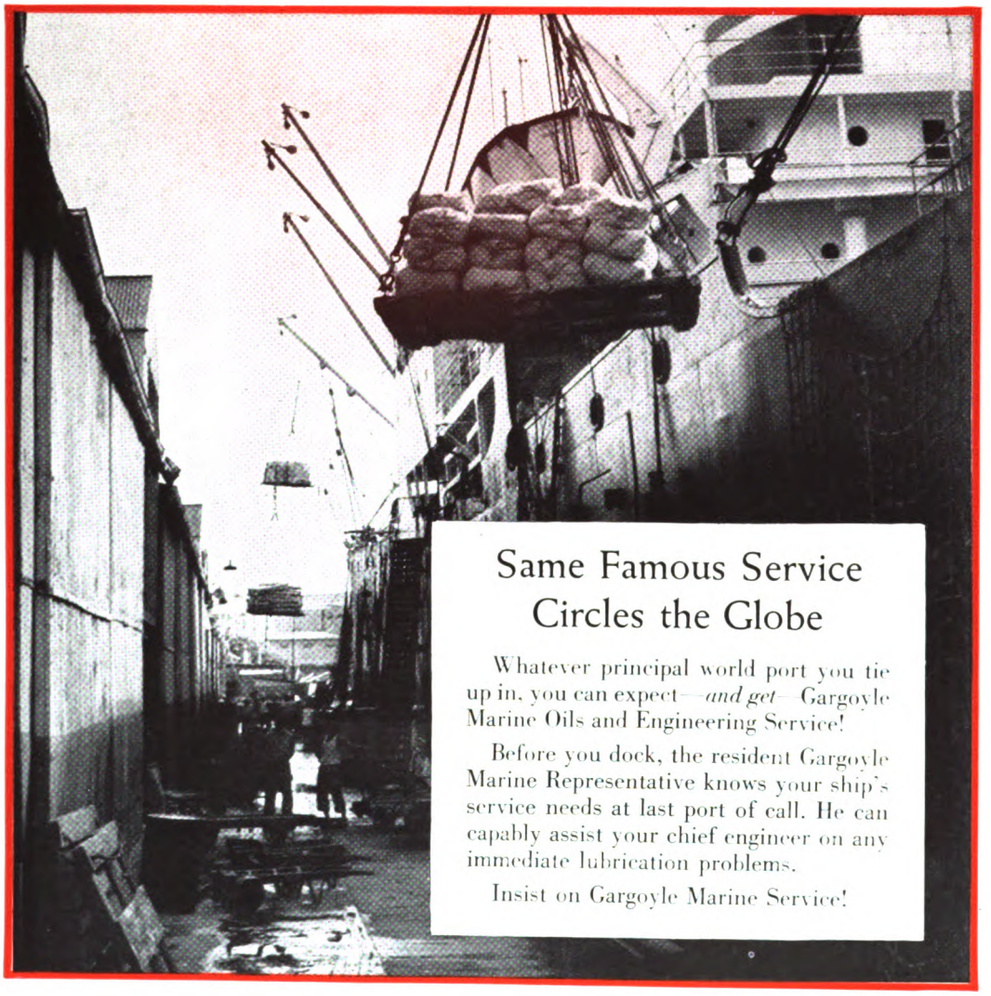
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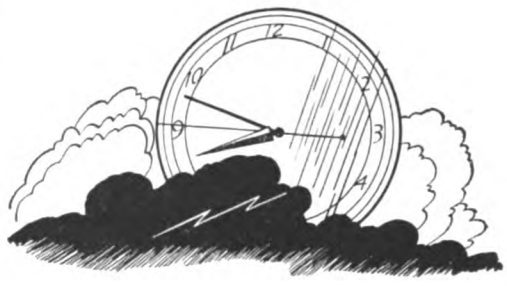
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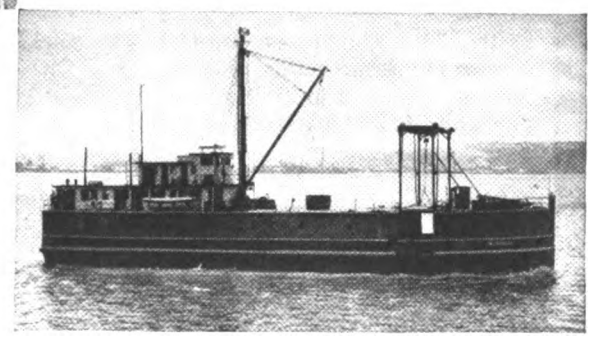
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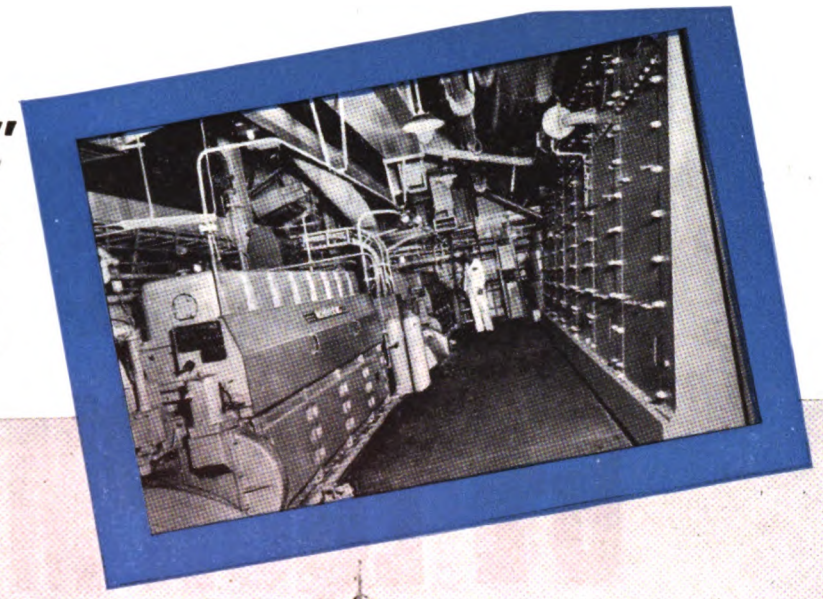
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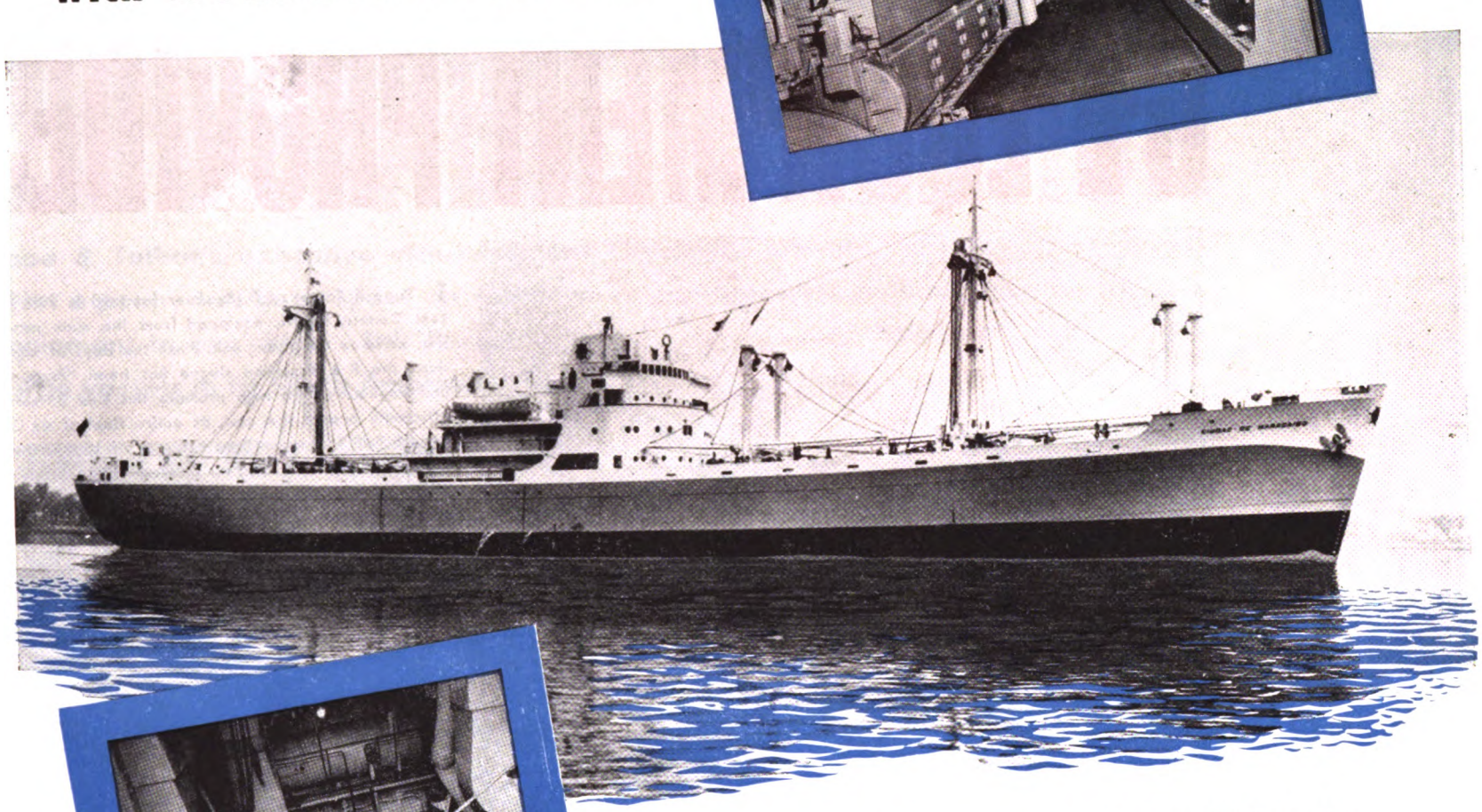
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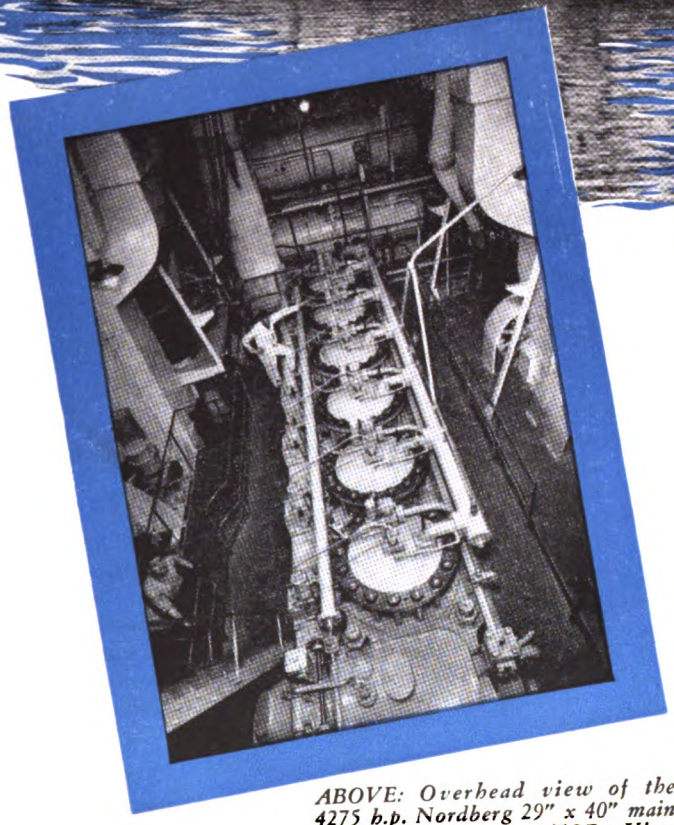
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"CIUDAD DE MARACAIBO"
...ready for Sea Duty
with NORDBERG DIESELS







ABOVE: Overhead view of the 4275 h.p. Nordberg 29" x 40" main propulsion engine. TOP: View showing part of the main engine and one of the three Nordberg 9" x 11½" Diesel generating units on board the "MARACAIBO."

. . . one of three new Sister Ships for FLOTA MERCANTE GRANCOLOMBIANA

THE modern, efficient design and construction of the new *CIUDAD DE MARACAIBO* is not only evident in her hull and superstructure, but in the engine room as well . . . where four Nordberg Diesels are installed for both propulsion and auxiliary service. In this vessel, as well as in two sister ships — all built by Canadian Vickers, Ltd. — a Nordberg 6-cylinder, 4275 h.p., two-cycle Diesel turns a single screw at 160 rpm. In addition, each vessel has three Nordberg 8-cylinder, 500 h.p., four-cycle supercharged Diesel generator sets, each rated at 345 k.w.

Two of these three 5700 deadweight ton vessels, designed for cargo operations out of South America, are now in service, and the third under construction.

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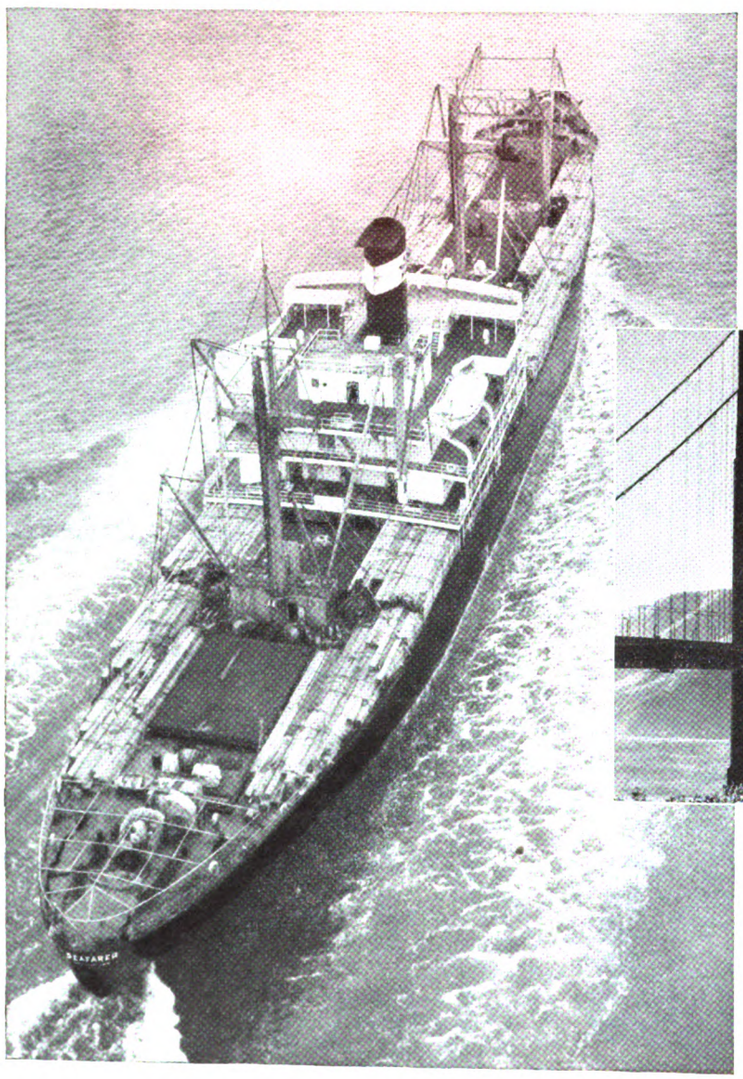
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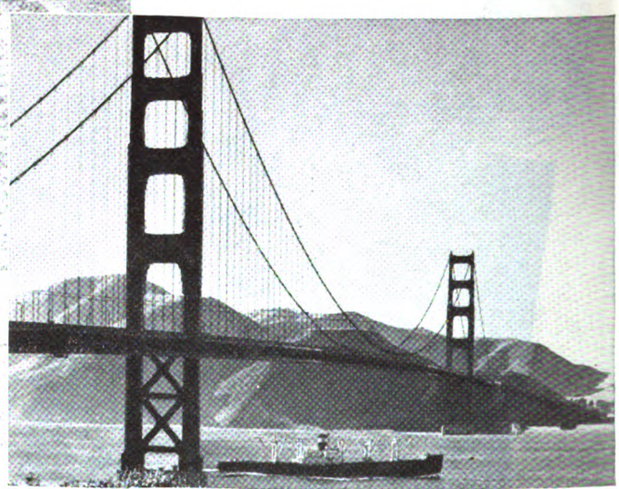
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G-E EQUIPMENT PROVIDES



1 Pope & Talbot's S.S. *Seafarer* (at left) is 100 percent General Electric equipped from the main propulsion drive to the radar unit. Since the days of clipper ships, the P & T service slogan has been "Frequency and Regularity." To help promote this kind of service efficiently and at low cost, its entire fleet of six C-3's—each 492 feet long with a capacity of 13,000 tons—are driven by G-E 8500-hp geared-turbine propulsion units. Five are also equipped with G-E 250-kw turbine-generator sets.



2 The S.S. *Pathfinder* passes under the Golden Gate Bridge as she completes a South American voyage. By the end of 1949 the P & T ships of the Pacific Argentine Brazil Line will have logged a total of over 850,000 nautical miles since the inauguration of the postwar service three years ago. During that time their G-E equipment has performed reliably and economically, without breakdowns or failures.

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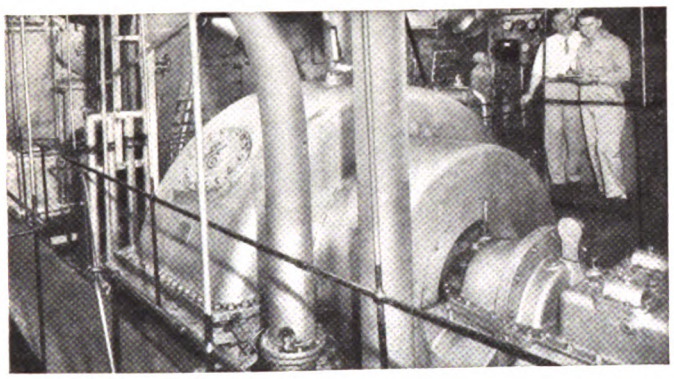
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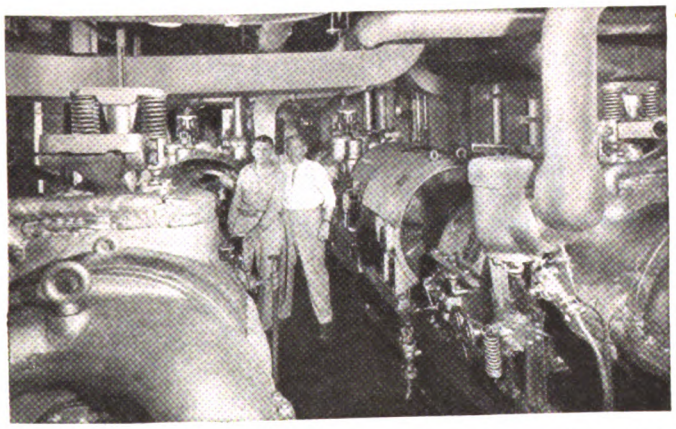
REPAIRS" SAYS P & T;

DEPENDABLE OPERATION

Pope & Talbot's executive vice-president Charles L. Wheeler enthusiastically says, "Not a penny has been spent on repair work for shoreside maintenance on the G-E equipment in our ships". This Pacific Coast firm, now in its 100th year, runs six C-3 Cargo vessels in its South American line and other operations.



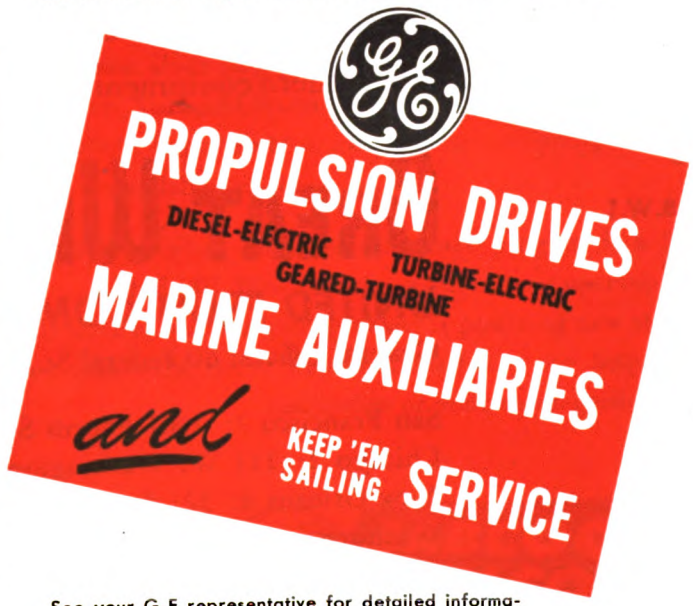
3 In the engine room of the S.S. *Trader*, Charles T. Schonbeck, chief engineer (right), and W. R. Hall, G-E marine service engineer, inspect the low-pressure turbine of the main 8500-hp propulsion unit. Compact G-E geared-turbine drives—installed on more than 400 ships of all types to date—have minimum weight per horsepower produced, and provide high over-all economy because fuel consumption and maintenance costs are low.



4 "I've sailed on three ships equipped with G-E propulsion units," says Chief Engineer Schonbeck. "They've proven themselves rugged, dependable and trouble-free, easy to operate and maintain. Outside of opening the units to inspect bearings, etc., we haven't had to touch them. One of the finest turbine sets I've ever sailed with!" G-E auxiliary sets, like the four 250-kw sets on the *Trader* shown above, have also provided Mr. Schonbeck with reliable service. Other G-E sets furnish auxiliary power for five ships of the fleet.



5 According to Charles L. Wheeler, executive vice president (above), "The experience of our engineers, plant superintendents, and personnel in general has been that the G-E emblem is synonymous with quality. It is our aim to have our own products and services warrant as worthy a reputation." With headquarters in San Francisco, Pope & Talbot not only operates three shipping lines throughout the Americas but is also one of the three largest lumber producers on the Pacific coast.



See your G-E representative for detailed information on dependable marine propulsion, auxiliaries, and "Keep 'Em Sailing" service. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

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Serving Middle America

for 50 years

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A half century of Caribbean service underscores today's function of the Great White Fleet. Here are fast, fully-refrigerated cargo and passenger vessels—modern and spotless—fit, willing and able to serve shippers and travellers in Inter-American trade. Competent staffs, afloat and ashore, and modern equipment and facilities are yours to command.

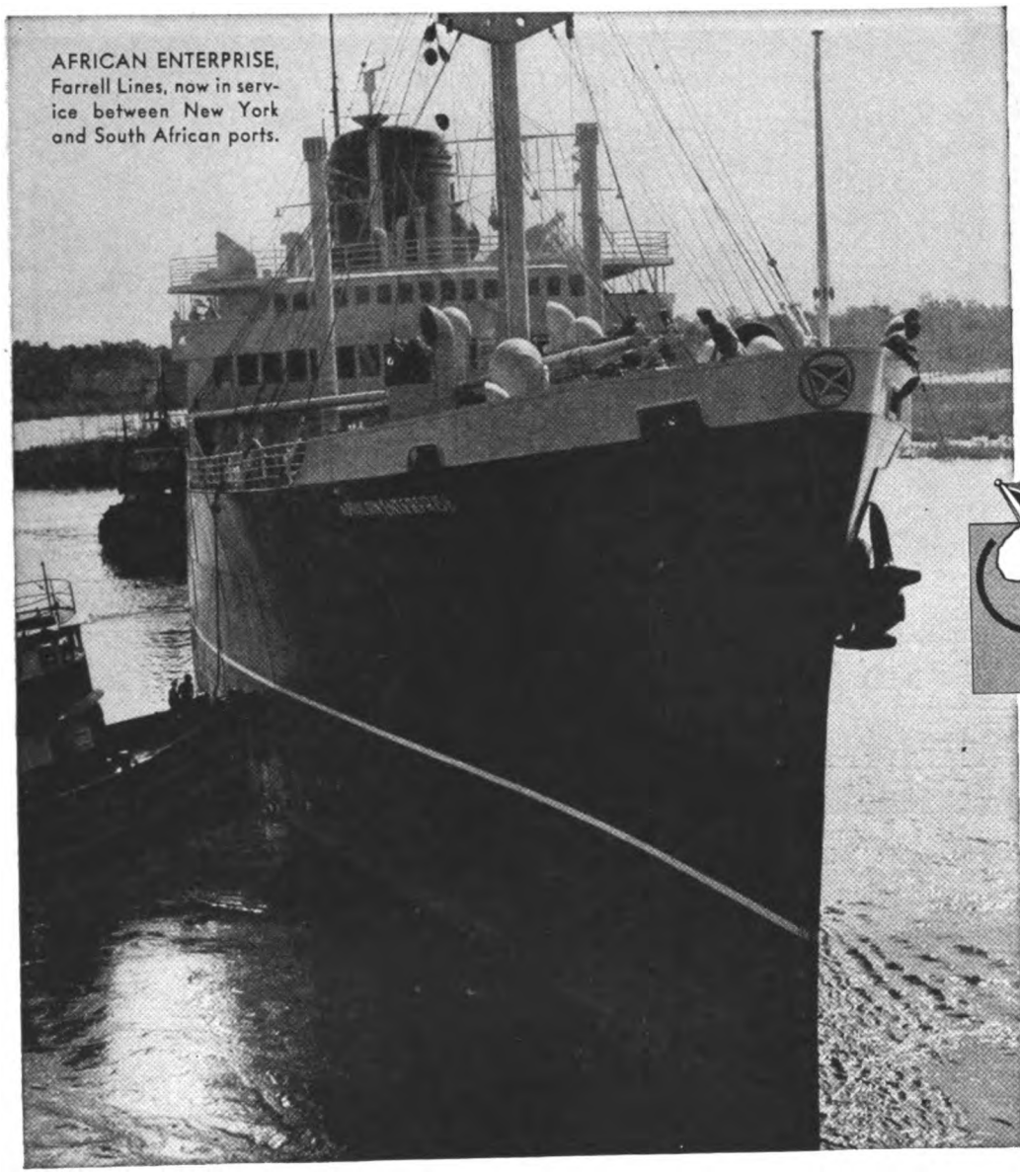
GREAT WHITE FLEET

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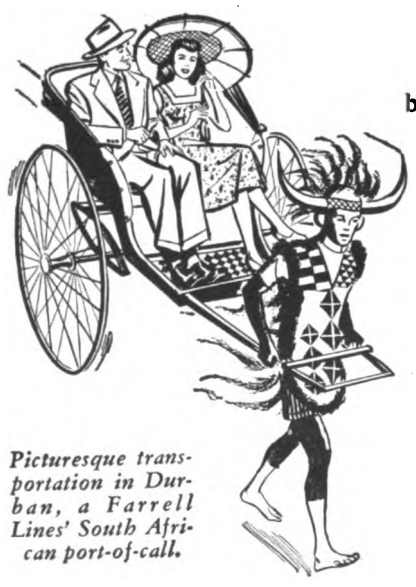
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AFRICAN ENTERPRISE and AFRICAN ENDEAVOR, Farrell Lines' newest and finest sister ships, now provide more luxurious comfort than ever before between New York and South African ports. And once again B&W Marine Boilers contribute importantly to maintaining a shipping company's reputation for swift, dependable service.

Supplying boilers for ships that mark progress is a 70-year-old story with B&W. Whatever the extent of your operation—lake, river, or ocean service; whether your problem is powering new ships or reboilering old ones—the B&W Marine Department can help you to profitable realization of your steam-generating requirements.

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1891 - 1949

FIFTY-EIGHT YEARS OF SERVICE

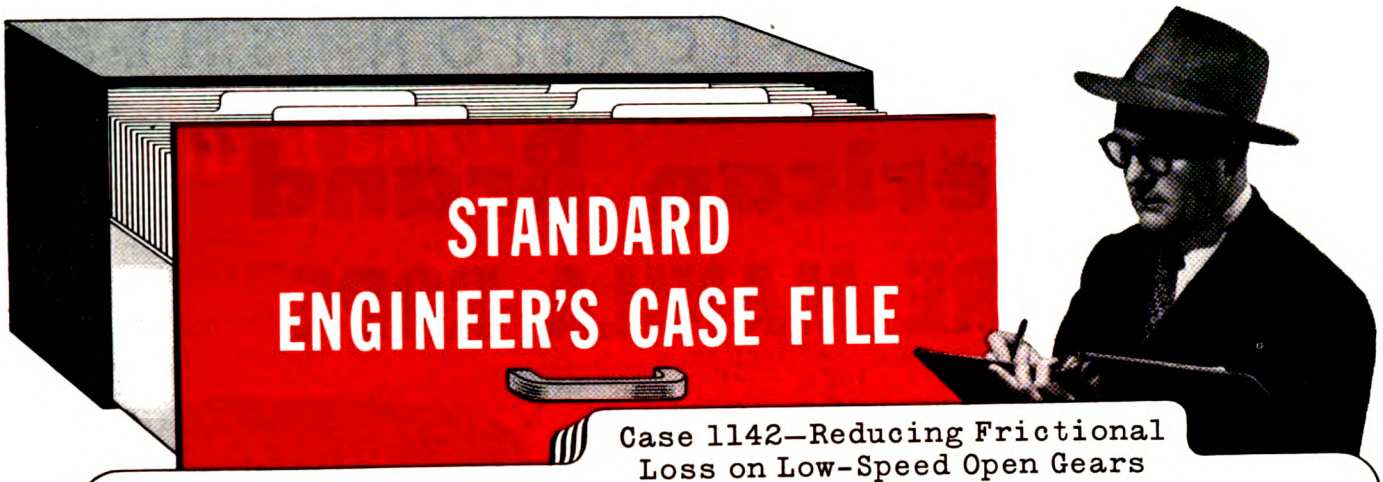
Newport News Hulls No. 1 and 2 built in 1891 are shown on September 28, 1949, in the waters of their birth, Hampton Roads. After fifty-eight years of service both vessels are still working daily. Hull No. 1, formerly the DOROTHY, is now the J. ALVAH CLARK of the Wood Towing Company. Hull No. 2, formerly the EL TORO, is now the VIRGINIA of the Norfolk Dredging Company.

These two vessels are further operating evidence of the fulfilment of the policy established by the Newport News Founder, Collis P. Huntington: "We shall build good ships here at a profit if we can, at a loss if we must, but always good ships."

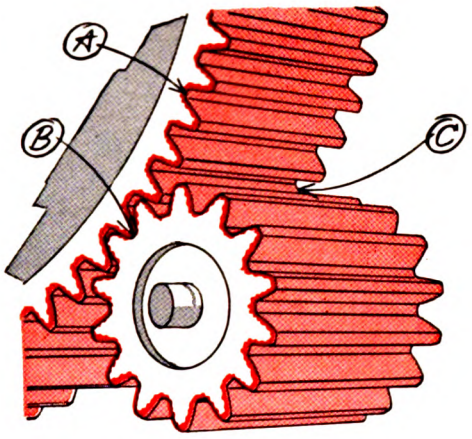
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY

NEWPORT NEWS, VIRGINIA

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Case 1142—Reducing Frictional Loss on Low-Speed Open Gears



LOW-SPEED OPEN GEARS

Extremely heavy shock loads on an open bull gear did not displace the tough lubricating film maintained by Calol Pinion Grease. Recommended for all heavy-duty open gears such as those on hoisting units, cranes, power shovels, and some grease-lubricated enclosed gears. Comes in four grades, each increasingly more adhesive: Nos. 0, 1, 2, 5.

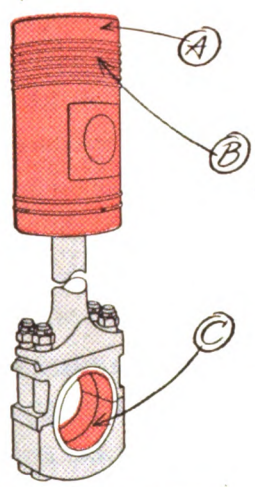
A. Sticks tight wherever applied — prevents excessive waste especially where gears move very slowly or are idle part of the time.

B. Cushions and lubricates — takes up slack between teeth and increases gear efficiency.

C. Very high viscosity but with oil-like consistency — flows back into place after being displaced by gear teeth.

Calol Pinion Grease is fully water-resistant. This assures lubrication on gears operating outdoors in wet weather or in other heavy moisture conditions.

Case 1153—Reducing Operating Costs on Large Marine Diesels



MARINE DIESEL PISTON ASSEMBLY

Many ship operators have proved that Calol Marine Oil reduces lubricating costs, prevents excessive friction and wear and maintains tight seals in large Diesel propulsion engines. Recommended for all marine Diesels where an uncompounded oil is satisfactory. Comes in five grades: 55, 65, 75, 90, 120 — SAE 20 to SAE 60.

A. Has high viscosity index — resists highest operating temperatures and minimizes gum formation.

B. Made from selected paraffinic type oils with low carbon residue — resists formation of carbon and sludge deposits that stick rings, cause blow-by.

C. Various grades have low pour points ranging from zero downward — assure good lubriation in all atmospheric and operating conditions.

Because of its high resistance to oxidation, non-corrosive and lubricating qualities, Calol Marine Oil is also used in enclosed reduction gears.

Trademark Reg. U. S. Pat. Office

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush St., San Francisco 20, California.

CALOL

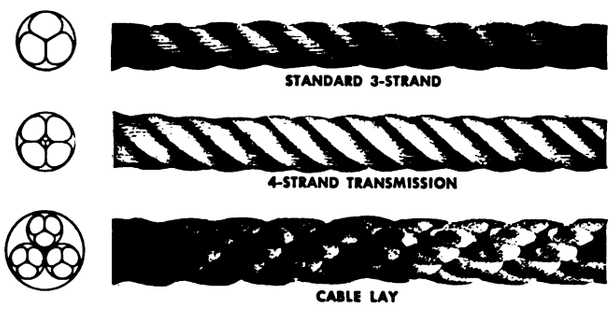
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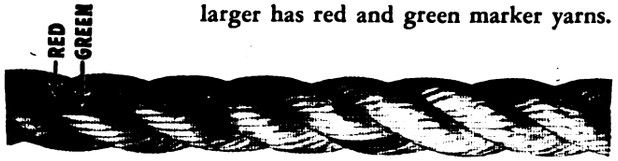
WEIGHT AND STRENGTH CHART

Diameter	Circ.	Approx. Gross Weight per Coil	Approx. Length per Coil	Approx. Feet per Pound	Approx. Weight per Foot	Min. Tensile Strength of "American Brand" Manila Rope	Safe Working Strains
ins.	ins.	lbs.	ft.		lbs.	lbs.	lbs.
1/4	3/8	45	3000	66.6	.015	450	90
1/4	3/4	55	2750	50.0	.020	600	120
1/4	1	65	2250	34.5	.029	1000	200
3/8	1 1/8	66	1620	24.4	.041	1350	270
1/4	1 1/4	63	1200	19.0	.053	1750	350
11	1 3/8	75	1200	16.0	.063	2250	450
1/2	1 1/2	90	1200	13.3	.075	2650	530
1/4	1 3/4	125	1200	9.61	.104	3450	690
5/8	2	160	1200	7.50	.133	4400	880
3/4	2 1/4	200	1200	6.00	.167	5400	1080
11	2 1/2	234	1200	5.13	.195	6500	1300
7/8	2 3/4	270	1200	4.45	.225	7700	1540
1	3	324	1200	3.71	.270	9000	1800
1 1/4	3 1/4	375	1200	3.20	.313	10500	2100
1 1/8	3 1/2	432	1200	2.78	.360	12000	2400
1 1/4	3 3/4	502	1200	2.40	.418	13500	2700
1 1/4	4	576	1200	2.09	.480	15000	3000
1 1/2	4 1/2	720	1200	1.67	.600	18500	3700
1 5/8	5	893	1200	1.34	.744	22500	4500
1 3/4	5 1/2	1073	1200	1.12	.895	26500	5300
2	6	1290	1200	.930	1.08	31000	6200
2 1/8	6 1/2	1503	1200	.800	1.25	36000	7200
2 1/4	7	1752	1200	.685	1.46	41000	8200
2 1/2	7 1/2	2004	1200	.600	1.67	46500	9300
2 5/8	8	2290	1200	.524	1.91	52000	10400
2 7/8	8 1/2	2580	1200	.465	2.15	58000	11600
3	9	2900	1200	.414	2.42	64000	12800
3 1/8	9 1/2	3225	1200	.372	2.69	71000	14200
3 1/4	10	3590	1200	.335	2.99	77000	15400
3 3/8	11	4400	1200	.273	3.67	91000	18200
4	12	5225	1200	.230	4.36	105000	21000

4 Strand wgts. about 7% more than 3 Strand

This is the very best Manila rope. It is made entirely of selected, long-fibre, Philippine hemp by one of the world's largest cordage mills. "AMERICAN BRAND" PURE MANILA ROPE reflects its quality in its appearance. It is clean, smooth and flexible, making it easy to rig and handle. It is always dependably uniform in size and strength. The special cordage solution used in waterproofing "AMERICAN BRAND" PURE MANILA ROPE imparts a stubborn resistance to moisture and drying out. It gives excellent service under the most difficult conditions. "AMERICAN BRAND" PURE MANILA ROPE is made in a complete range of sizes for utility and industrial uses.

For ready identification by the purchaser, all "AMERICAN BRAND" PURE MANILA ROPE 3/4" in diameter and larger has red and green marker yarns.



For copies of this page and a handy reference chart of the Weight and Strength table, write to Dept. L.

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Branch Factories: **ST. LOUIS CORDAGE MILLS, ST. LOUIS 4, MO. • DELAWARE RIVER JUTE MILLS, PHILADELPHIA 48, PA.**

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25-acre yard at Alameda includes 4 piers totaling 1,914 linear feet; wharf—1,560 feet long; 2 drydocks of 10,500 and 14,000 ton capacities.

San Francisco facilities consist of Pier 36 (1,229 linear feet) and 36,000 square feet of shops.

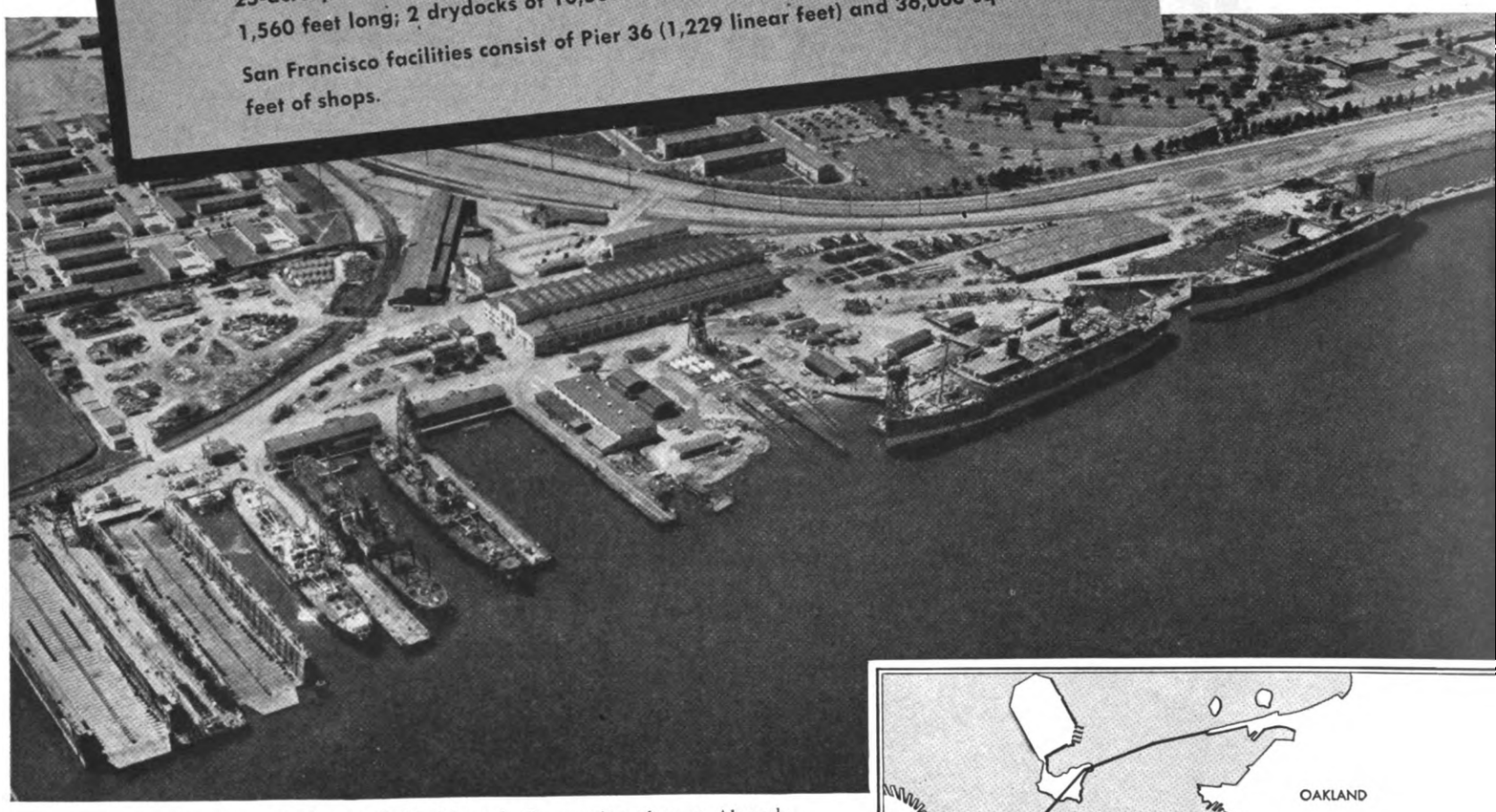
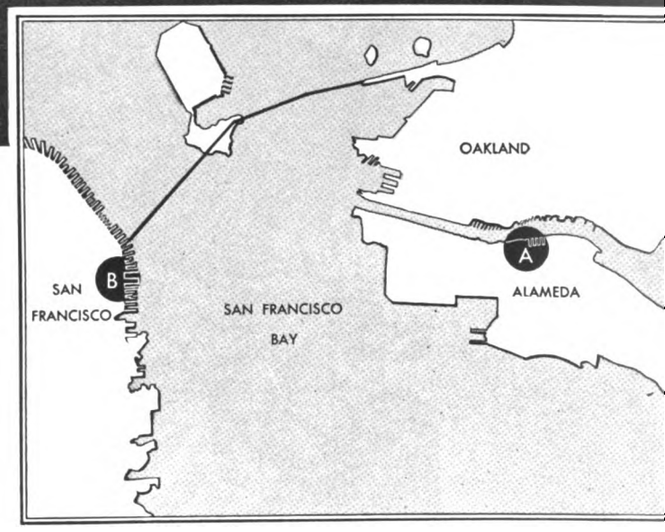


PHOTO ABOVE—Airview of Todd Shipyards Corporation plant at Alameda.



Over 50 years of good workmanship in repairing, converting and building ships of every type are reflected in all Todd shipyard operations. Todd plants—located on the Pacific, Gulf and Atlantic coasts—are staffed by experts in every phase of ship construction. **Major conversion or routine repairs—Todd has the specialists, the facilities and the experience to handle your job with speed and economy.**

Mobile service for ships at dockside or at anchor.

AREA A—Alameda yard, on San Francisco Bay, diagonally across from the Golden Gate.

AREA B—Pier 36 and Beale Street shops, on San Francisco's Embarcadero.

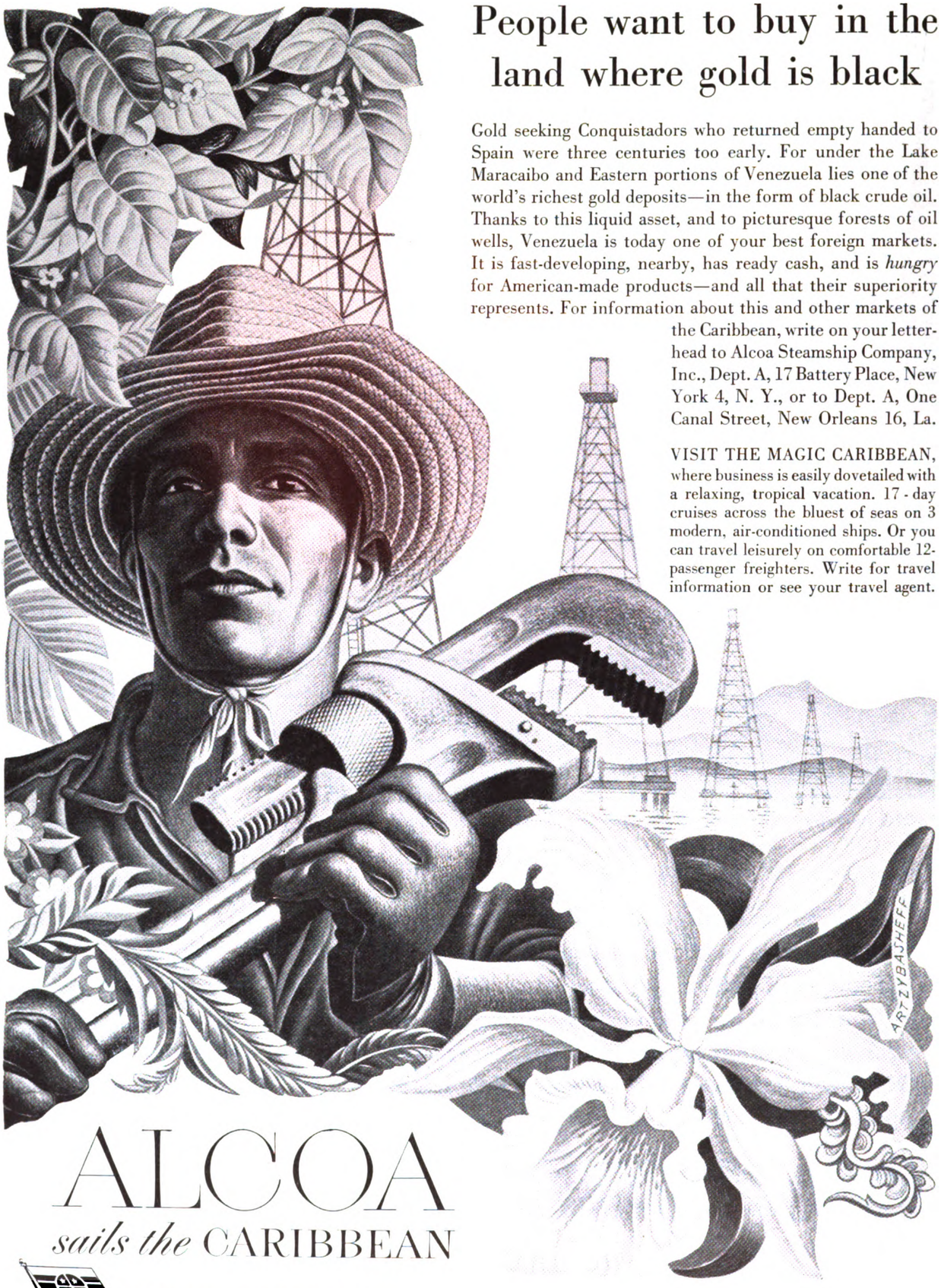
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Gold seeking Conquistadors who returned empty handed to Spain were three centuries too early. For under the Lake Maracaibo and Eastern portions of Venezuela lies one of the world's richest gold deposits—in the form of black crude oil. Thanks to this liquid asset, and to picturesque forests of oil wells, Venezuela is today one of your best foreign markets. It is fast-developing, nearby, has ready cash, and is *hungry* for American-made products—and all that their superiority represents. For information about this and other markets of the Caribbean, write on your letterhead to Alcoa Steamship Company, Inc., Dept. A, 17 Battery Place, New York 4, N. Y., or to Dept. A, One Canal Street, New Orleans 16, La.

VISIT THE MAGIC CARIBBEAN, where business is easily dovetailed with a relaxing, tropical vacation. 17-day cruises across the bluest of seas on 3 modern, air-conditioned ships. Or you can travel leisurely on comfortable 12-passenger freighters. Write for travel information or see your travel agent.

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the PIONEER is still the LEADER

The *Original* Dual Fuel Oil Treatment that gives *Constant Cleaning Action* from Tank to Stack . . .

Liquid SOOTOUT *leadership* has been steadily maintained by *outstandingly superior performance.* It is the modern successor to the old powder type fireside treatments and sludge solvents. Its superiority is recognized generally by marine men *who judge a product on the basis of actual performance.*

Liquid SOOTOUT was the *first* to pioneer in what has become a highly competitive field. *Today,* as in the past, it is providing double cleaning action from tank to stack with *less cost* and *less labor.* It is on this basis of *actual superior performance* that Liquid SOOTOUT has maintained its *leadership over all imitators.*

Double Cleaning Action

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid. When applied to fuel oil in proper proportion, Liquid SOOTOUT disperses condensation and sludge forming elements, and reduces strainer, preheater and nozzle maintenance.

FOR FIRESIDE — Liquid SOOTOUT removes carbon scale and slag in combustion areas. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.



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*Brooklyn, New York, Monitor Machinery Corp.
*Brownsville, Texas, Coast Iron & Machine Works
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*Galveston, Texas, Galveston Survey Agency
Houston, Texas, Universal Terminal Warehouse Co.
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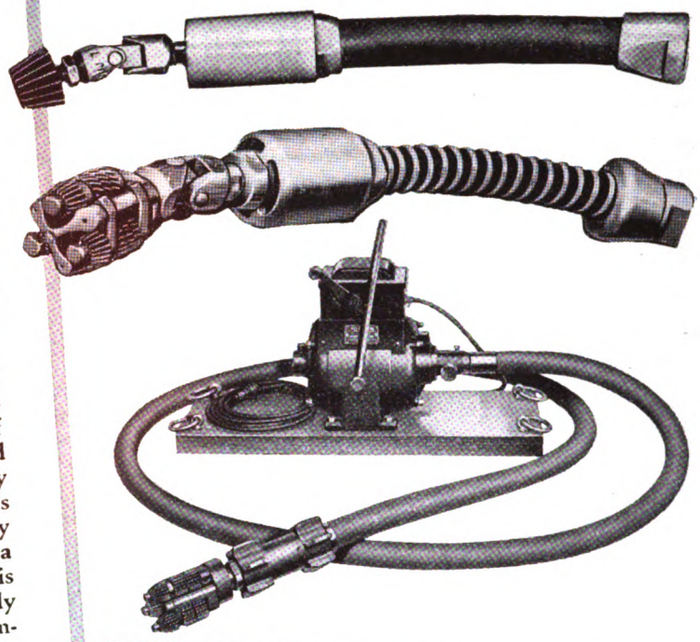
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TUBE CLEANERS
FIT YOUR *SPECIAL* NEEDS

EVERY HOUR COUNTS when equipment is "down" for tube cleaning. Fast-acting Wilson Tube Cleaners make short work of the toughest deposits . . . clean both straight and curved ferrous and non-ferrous tubes thoroughly . . . turn costly down-time into profitable production time.

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WILSON-DUDGEON
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INSURE *FIRM SEATING* OF TUBES

NOW Wilson offers a complete line of precision-made Wilson-Dudgeon Tube Expanders for every tube rolling need. Wilson-Dudgeon Tube Expanders are made of the highest quality steel, carefully heat-treated to assure longest possible service life. They are designed to give the smooth, efficient rolling action that insures firm seating for the tube.

There is a Wilson-Dudgeon expander to seat tubes tightly . . . provide perfectly rolled joints . . . reduce time-wasting re-rolling and re-inspection for every type of tubular apparatus. For data on general tube expanders, see Bulletin 380. You'll find information on special tube expanders for heat exchangers in Bulletin 420. Write for them today.



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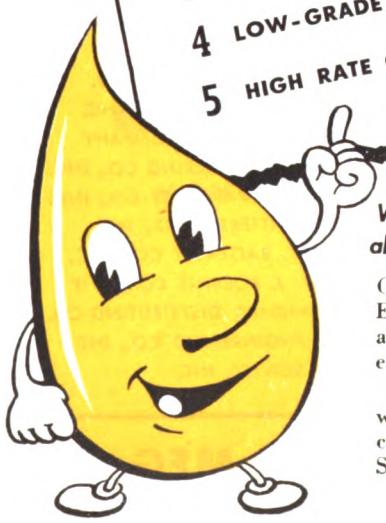
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SHELL RIMULA OIL

SHELL RESEARCH develops in ONE oil qualities which meet any combination of these conditions:

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We want to tell you more about new Shell Rimula Oil

Call the Shell Lubrication Engineer — he will gladly advise you on any of your engine lubrication problems.

For informative literature, write Shell Oil Company, Incorporated, 100 Bush Street, San Francisco 6, California.

These conditions demanded this new oil:

Engines, particularly Diesels, seldom encounter *ideal* operating conditions. Low-grade fuels...wide variations in load . . . long periods of light-load operation . . . subnormal jacket temperatures . all are too-common conditions heretofore associated with high maintenance costs and short engine life.

You run into such trouble on many construction jobs, in pumping installations, in standby service and in marine auxiliary units . . . to name just a few. And . . . highly supercharged Diesels frequently magnify the effects of extreme operating conditions.

Shell Research scientists regarded the situation as a challenge, and went to work on an entirely new concept of engine lubrication. The result is Shell Rimula Oil . . . the *first* engine lubricant to effectively counteract high wear under *both* extremes —heavy and light loads . . . and the *first* to permit operation *without penalty* on low-grade fuels.

Shell Rimula Oil combines the above qualities with full detergent-dispersant action that keeps valves and rings free . . . reduces lacquer and carbon deposits to the point of harmlessness.

For Extreme Service . . .

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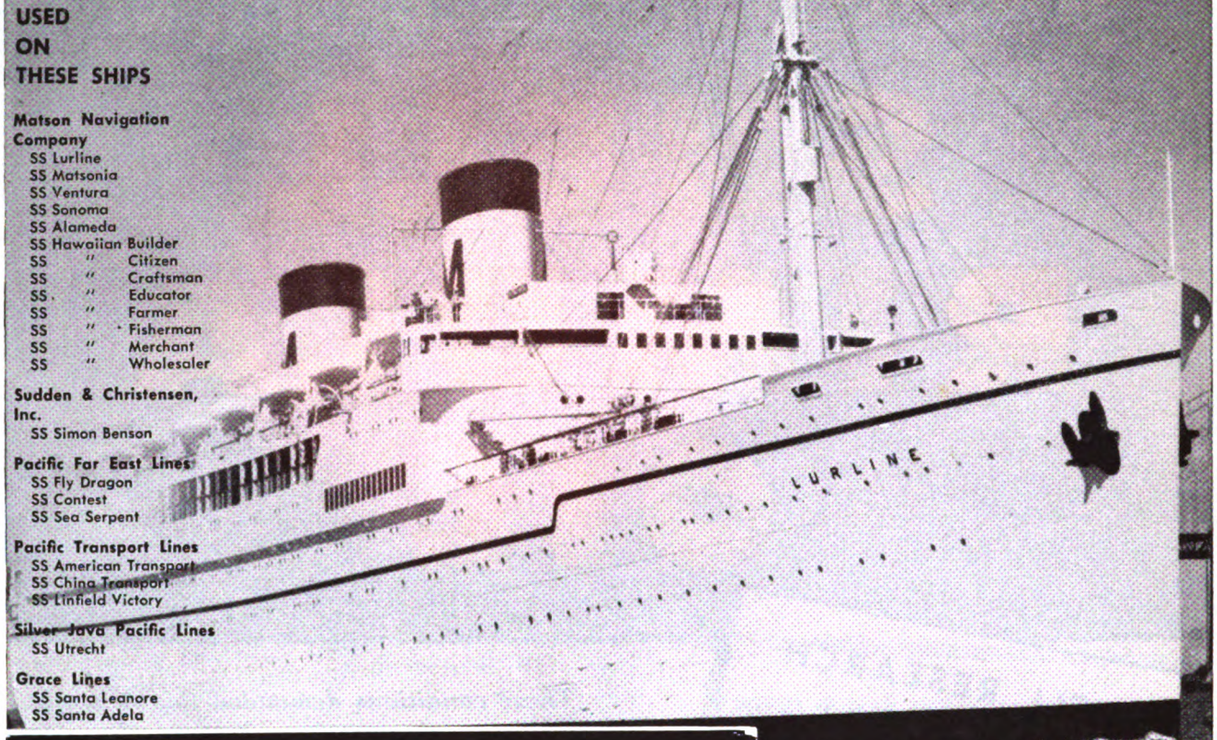
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SS Simon Benson

Pacific Far East Lines
SS Fly Dragon
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SS Sea Serpent

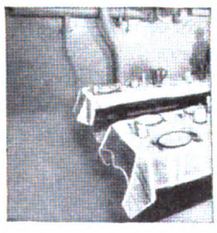
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WHEN USED WITH Steelcote PROCESS 1-2-3-4 for MAGNESITE DECKS



Save time, save money, save inconvenience. Actual ship tests prove you can do all these and have more beautiful floors too. Ask for details of Steelcote Floor Process at the ports listed at right or Steelcote Mfg. Co., St. Louis, Mo.



Save the cost of deck coating every few months — have more beautiful floors that water alone will clean

other Steelcote Problem-Solving Products

Transfo:m mouldy, dingy, rusty shower and bath rooms into gleaming, porcelain-like beauty with Steelcote Damp-Tex Pretreated. Dries to touch in 3 to 4 hours. Also recommended for shaft alleys, bilges, deep tanks and bottoms. **Damp-Tex Regular Pre-treated also resists rust, germs, mildew, does not contaminate food. Use on deep tanks, fresh water tanks, reefer boxes and refrigeration areas. Easy to apply to wet or dry surfaces.**

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Boston — SELBY, BATTERSBY CO., INC.
Honolulu, T. H. — LEWERS & COOKE LTD.
Houston — GULF ENGINEERING CO., INC.
Mobile — MARINE SPECIALTIES COMPANY
New Orleans — GULF ENGINEERING CO., INC.
Newport News — SELBY, BATTERSBY CO., INC.
New York — SELBY BATTERSBY CO., INC.
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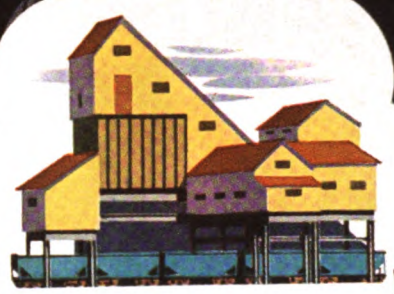
IN THE EAST—Wickwire Spencer Steel Div. of C. F. &I.
500 Fifth Ave., New York 18, N. Y.
IN THE ROCKIES—The Colorado Fuel and Iron Corp.
Continental Oil Bldg., Denver, Colo.
ON THE WEST COAST—The California Wire Cloth Corp.
1080—19th Ave., Oakland 6, Cal.



LOGGING



TRANSPORTATION



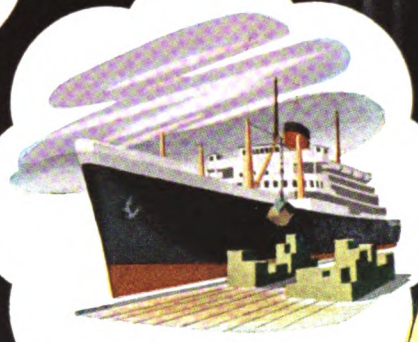
MINING



PETROLEUM



MANUFACTURING



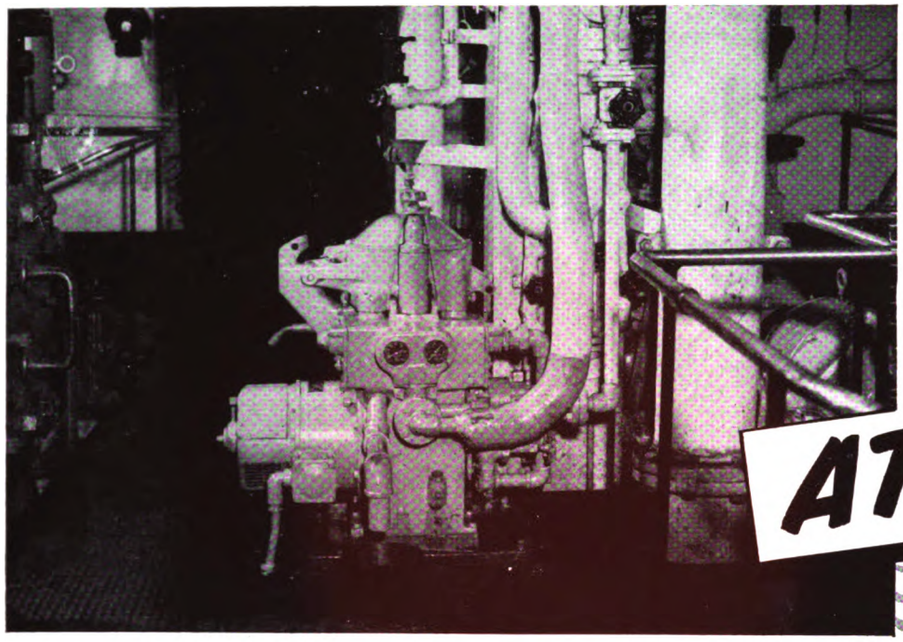
MARINE



CONSTRUCTION

A. E. Brotman

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AT SEA

TURBINE PROTECTION MUST BE 2-WAY

At sea it is not sufficient to remove just the dirt from turbine oil. Dirt removal is important but relatively easy. Unless **water,** too, is simultaneously taken out of the oil, the turbine is only **half** protected.



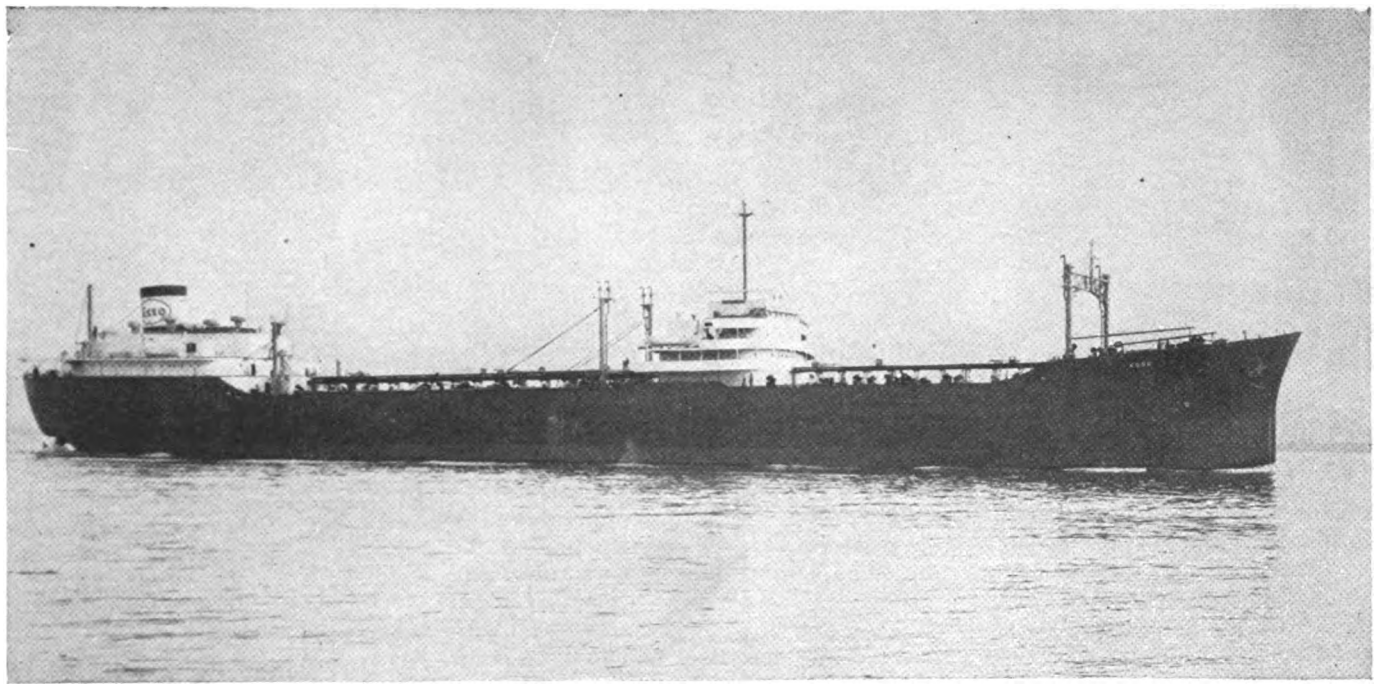
De Laval Oil Purifiers by means of centrifugal force both **clean** turbine oil and dehydrate it. Maybe the oil is practically dry—just a few drops of condensate. The Purifier promptly removes the few drops. Some day a major leak might develop—the De Laval machine will remove the leakage as fast as it collects, and thus prevent serious contamination.

A De Laval Oil Purifier of proper capacity, operated on continuous by-pass, will purify the turbine oil in circulation three to four times daily.

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FOR BETTER ENGINE ROOM PERFORMANCE

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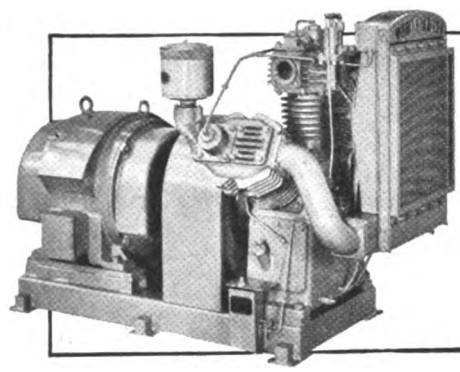


AIR FOR ALL PURPOSES

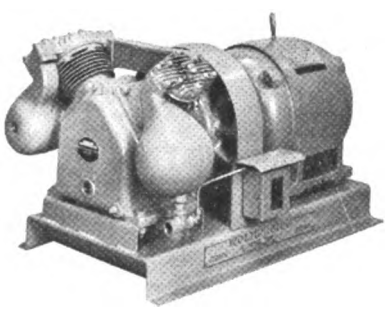
Worthington Air Compressors on the New Super-Tankers

The new super-tankers being built by both Sun and Newport News are equipped with Worthington Soot Blowers & Ship's Service Air Compressors, and Worthington Combustion Control Air Compressors. Especially designed for shipboard service, these completely automatic compressors are compact and rugged, yet as light in weight as is consistent with best engineering practice.

Worthington's many years of Marine experience have been built into these vital auxiliaries which give daily proof that *there's more worth in Worthington.* Consult with Worthington's Marine engineers to solve your shipboard Air Compressor problems by contacting *Worthington Pump and Machinery Corporation, Marine Division, Harrison, N. J.*



Worthington Soot Blower & Ship's Service Air Compressor Model V3A2 ... Size: $\frac{6}{6}/5 \times 5$ in. 110 cfm actual . . . 125# . . . 30 hp . . . 870 rpm.



Worthington Combustion Control Air Compressor Model TB . . . Size: $3\frac{7}{8}/2\frac{5}{16} \times 2\frac{1}{8}$ in. 20 cfm actual . . . 125# . . . 7½ hp . . . 1750 rpm.

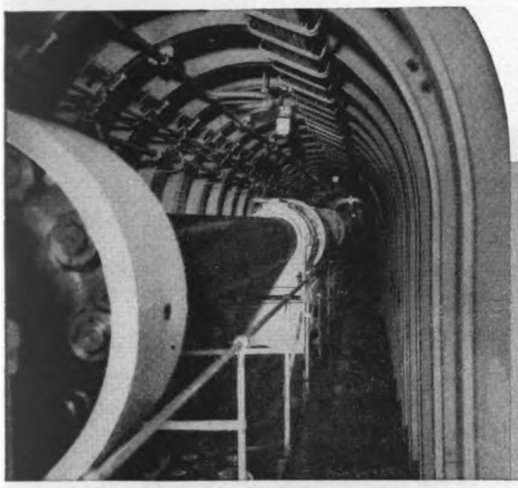
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SHAFT ALLEY Chatter

Bethlehem San Francisco Yard Celebrates 100th Anniversary

Jammed with California centennial lore, a beautiful new gold-covered booklet titled: "1849-1949. A Century of Progress" was issued recently by the Bethlehem Steel Company's Shipbuilding Division to mark the 100th birthday of the firm's San Francisco shipyard, once the historical Union Iron Works.

"From its humble beginning as a two-man smithy, the San Francisco yard of Bethlehem Steel Co., Shipbuilding Division, is one of the largest privately-operated shipbuilding and ship repair yards in the United States and the oldest from the standpoint of continuous operation," the booklet's introduction says.

Through its pages are interesting pictures of the people who owned and manned the yard and mining machinery, locomotives, cable car driving units, gold dredges and ships made by the yard.

The ships from Union Iron Works and Bethlehem-San Francisco helped America win three wars, the Spanish-American and the two World Wars. From this yard's building ways came men-of-war back in the nineties, including the cruiser OLYMPIA, which led Admiral George Dewey's fleet into Manila Bay and the battleship OREGON which raced around Cape Horn to win the Battle of Santiago Bay.

Peter and James Donahue gave up their search for gold and founded the two-man smithy in 1849, with their only equipment being a pair of hand-operated bellows and a charcoal forge. The pictures of the Donahues and their brother, Michael Donahue, partner for a time, are printed, as are those of Irving M. Scott, general manager from 1865 to 1903; George and James Dickie, brothers, who were manager and superintendent, respectively; Henry T. Scott, a partner who veered the firm's interest into shipbuilding; J. J. Tynan, manager from 1905 to 1928; A. S. Gunn, manager from 1927 to his death in 1944; W. M. Laughton, who succeeded him and T. C. Ingersoll, manager today.

⚓ ⚓ ⚓

American Export Lines Names E. S. Fayle as Port Captain

Captain Edmond S. Fayle of New York, a veteran of 34 years' seafaring, has been appointed port captain of American Export Lines, it is announced by L. S. Andrews, vice president of operations.



CAPTAIN EDMOND S. FAYLE who has been appointed Port Captain in New York for American Export Lines.

Capt. Fayle, who for the past three years has been assistant to the port captain assigned to Pier 84, New York, succeeds Captain Sydney L. Blackledge who was named marine superintendent. Captain Fayle's former post was filled by Captain Robert Meek.

While serving at Pier 84, Captain Fayle supervised the docking and sailing of the Italian liners SATURNIA and VULCANIA for which American Export Lines acts as agents, in addition to the company's own ships which berthed there.

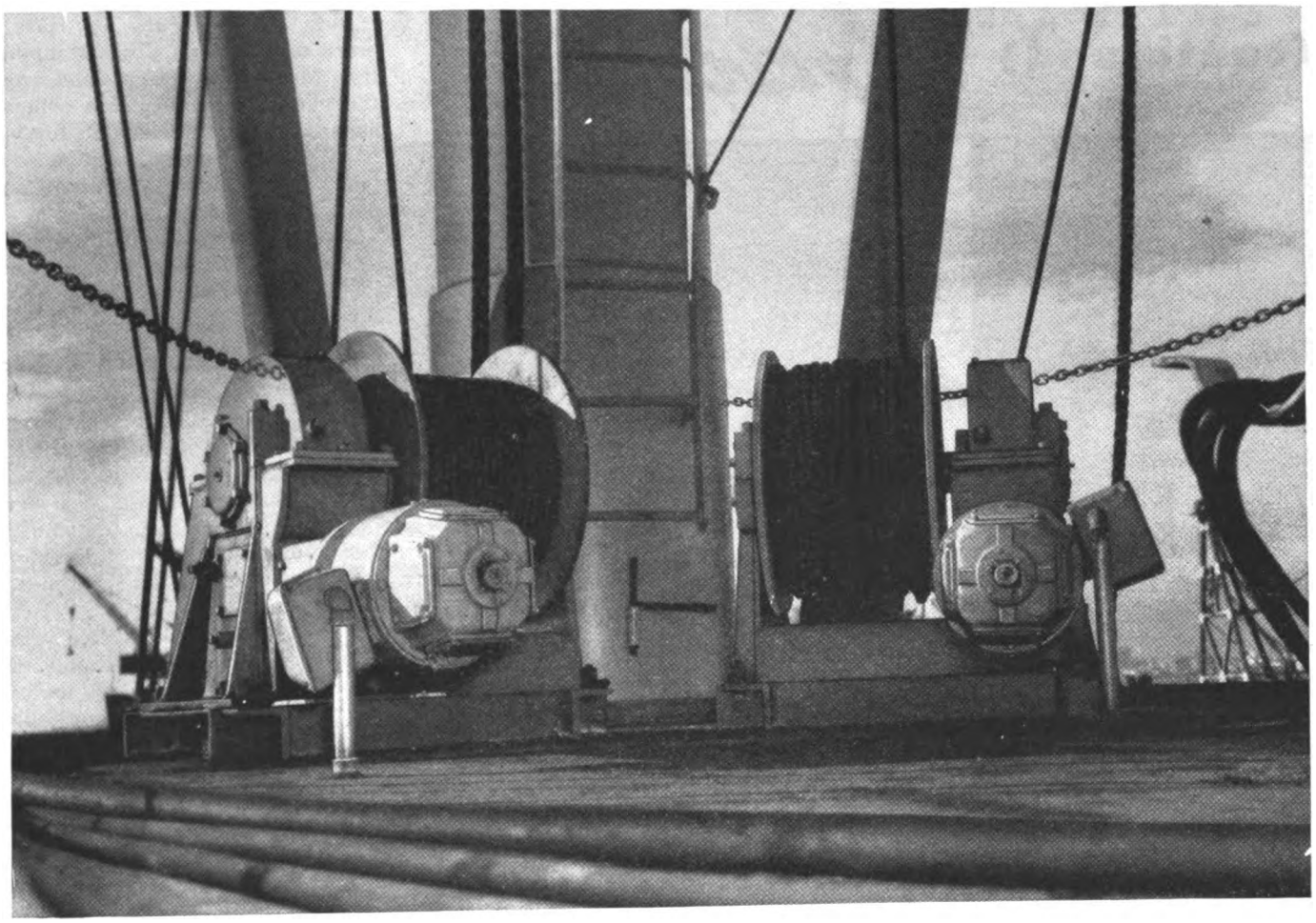
In 1928 he joined the American Export Lines after serving with the Cosmopolitan Shipping Company as mate and master since 1920. During the next eight years he served as both mate and master on the original "4 Aces"—The EXCALIBUR, EXOCHORDA, EXETER and EXCAMBION—and on several of the company's cargo vessels.

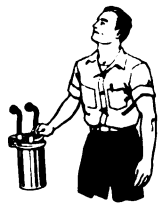
From 1936 to 1944, until he became assistant to the port captain, he was skipper on various freight vessels. In 1946 he was assigned to Pier 84 when American Export Lines leased the pier to handle its expanded passenger and cargo services.

NEW OFFICERS elected by the Marine Club of New Orleans . . . Seated from left to right: Past President EDWARD H. WRIGHT, Boland Machine & Manufacturing Co.; President ALBERT DIEUDONNE, Todd-Johnson Drydock Co.
Standing, left to right: CAPTAIN D. E. GRIFFIN, Lykes Bros. Steamship Co., Treasurer; W. H. ZIGLER, New Orleans Port of Embarkation, Vice President; W. M. JACKSON, Isthmian Steamship Co., Secretary.



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ON any ship which has 16 or more cargo booms, and makes 30 ports of call a year, a yearly saving of at least $20,000 can be made just by throwing switches. How? By changing over from manual positioning of booms to smooth, safe American Boom Topping Winches!

The arithmetic couldn't be simpler. Just count the men who stand idle at each hatch while a boom shift is being made. Multiply that number by 10—which is the number of minutes saved each time the boom is re-positioned. Figure out the saving for the whole ship for the entire year. It's at least $20,000, for wages alone!

These winches have now made one of the most dangerous shipboard operations one of the safest. Thanks to automatic action in the American Boom Topping Winch, any load that can't be lowered safely can't be started down. And there are no loose coils of line on the deck to catch fingers, hands or legs; it's always reeved neatly on the drum.

Would you like to make $20,000 a year for running a safer ship? Mail the coupon below, for information.

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SHAFT ALLEY (continued) Chatter



LOUIS B. PATE, National President of the Propeller Club, speaks at the first Propeller Club luncheon to be held this Fall.



STILL FIGHTING mad after his verbal tussle with Comptroller General Lindsay Warren, Maritime Commissioner GRENVILLE MELLEN was guest speaker at the first Fall luncheon meeting of the New York Propeller Club.

Joe Hare Succeeds Hayes At Seattle USMC Post

William T. Hayes, once the assistant operations director of the old United States Shipping Board, retires as port representative at Seattle for the United States Maritime Commission on November 1 and is succeeded by Joe Hare, who has been port representative at San Pedro for about 10 years.

Before Mr. Hare got away from Southern California he was the guest of honor at a number of farewell parties given him by, among others, the Los Angeles Steamship Association, The Society of Port Engineers, and the accompanying pictures portray a farewell given by some of his waterfront pals at the San Pedro Elks Club.

Both Mr. Hayes and Mr. Hare are veterans of the West Coast shipping industry. Mr. Hayes was a chief engineer of the old Pacific Steamship company, was aboard the ss CONGRESS for years and has been with the maintenance and repair division of the Maritime Commission for a long time.

Joe Hare, too, was with the old Shipping Board, went to sea as a chief and later was a marine salesman for the Shell Oil Co.

⚓ ⚓ ⚓

Cullman Elected To Board Of AGWI Lines

Howard S. Cullman, chairman of The Port of New York Authority, was elected to the board of Atlantic Gulf and West Indies Steamship Lines. The services of Cuba Mail have been expanded in the last few months, and it is anticipated that additional tonnage will be put into the service shortly.

Mr. Cullman, who is vice president of Cullman Brothers, Inc., holds many additional important offices, including the Chairmanship of the Equitable Office Building Corporation and the Lexington Avenue and Forty-second Street Corporation.

At the meeting, a quarterly dividend at the rate of 5 per cent per annum on the preferred stock of AGWI was declared. Heretofore, dividends have been payable semi-annually, but the quarterly dividend was declared in order to synchronize the payment with the proposed registration and offer of exchange of the new preferred stock of the New York and Cuba Mail Steamship Company.

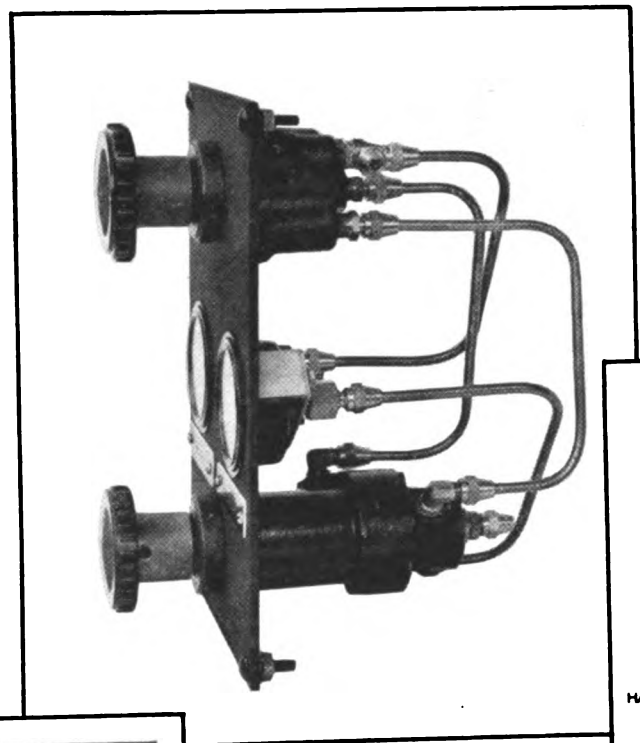
CABBAGES AND KINGS—Top row, left to right: HERB PICKERING, W. H. Wickersham & Co., JOE HARE, receiving a head of lettuce, an oil can and plenty of sport shirts, and CAPTAIN T. W. PETERS, Standard Oil Co.
ED KELLENBERGER, Salvor; EINAR RICHTER, Seaside Supply Stores; RUSS CYRUS, Union Oil Co.; STUART SMALL, Cavanaugh Machine Works; CAPTAIN BOYD, Catalina Island Steamship Co.; ALFRED WESTON, FLOYD NELSON, Texaco, and BOB SNODGRASS, secretary of the Elks and Bilge Clubs.
Bottom row, left to right: ED RYAN, E. L. Ryan Co.; "CHUBBY" SPENCER; FRANK CAVANAUGH, Cavanaugh Machine Works; FRED CORDES, Deconhil Shipping Co.; JOE COSTELLO, J. M. Costello Supply Co. and GEORGE DOWNEY, United States Lines; ARTHUR R. PEGG, SR. and JR., International Marine Paint agency; CAPTAIN AL BROWN and JACK GILBRIDE, Todd Shipyards.

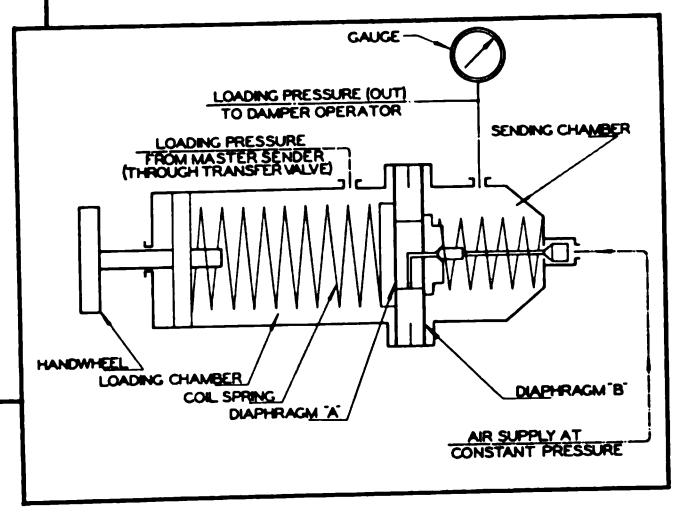


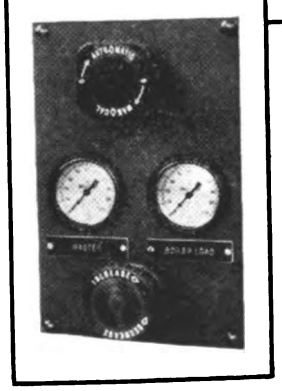
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Here is the **Boiler Relay** of

HAGAN AUTOMATIC COMBUSTION CONTROL







In the Hagan system of automatic combustion control, the loading pressure from the Master Sender—which varies in proportion to changes in steam pressure—is transmitted to the Damper Operator by way of the Boiler Relay Station. This relay, together with the transfer valve used with it, is shown in the upper photograph (relay is lower portion).

The diagram at the right shows how the Relay operates. Incoming loading pressure from the Master Sender enters the loading chamber. Air is automatically admitted to or exhausted from the sending chamber until the pressures on Diaphragms "A" and "B" are equal. The pressure in the sending chamber is transmitted, through the transfer valve, to the Damper Operator.

The relation between incoming and outgoing pressures is adjusted simply by turning the handwheel, thus changing the loading on the coil spring. Since each boiler has its own relay, this easy adjustment of pressure relationships permits the boiler operator to balance loads between boilers as desired.

The simplicity and precision of the Boiler Relay is typical of the whole Hagan Control System. For more detailed information on this system and its components, fill in the coupon below or write to Hagan Corporation, Hagan Building, Pittsburgh 30, Pa.

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SHAFT ALLEY (continued) Chatter

Admiralty Attorney Heads Seattle Propeller Club

Claude E. Wakefield, partner, Bogle, Bogle and Gates, admiralty attorneys has been elected unopposed to succeed G. J. Ackerman, American Mail Line, as president of the Propeller Club, Port of Seattle.

Also elected unopposed was Alex D. Stewart, The LOG, as secretary treasurer. Howard M. Burke, Williams Dimond Company, was elected vice-president. Elected to the board of governors to fill expired terms of Burke, and M. M. McKinstry, were Frank J. Ewara, Olympic Steamship Company and A. E. Lee, Interocean Steamship Corporation. Holdover members on the board are E. J. Barrington, Pope and Talbot, Inc.; H. W. Blaney, Lake Union Drydock Company; W. J. Jones, States Steamship Company; and Paul Pearson, Foss Launch and Tug Company.

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No. California Naval Arch. Announce Coming Meetings

Northern California Section, The Society of Naval Architects and Marine Engineers, announces its coming meetings as follows:

November 30—Dino A. Morelli, professor of mechanical engineering at California Institute of Technology, will present a paper on "Propeller Design."

January 31—R. A. Beekman, General Electric Co., will talk on "Problems of Electrical Distribution on Shipboard."

March 30—Hugh A. MacDonald, Stevens Institute of Technology, Hoboken, N. J., will have a paper on "Towing Tanks."

May 31—Student program, details to be worked out later.

These meetings will be held at the Engineers' Club, San Francisco.

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Program for Naval Architects Annual Meeting

The 57th Annual Meeting of The Society of Naval Architects and Marine Engineers will be held in New York City on November 9th to 12th, 1949, at the Waldorf-Astoria Hotel. Nine technical papers have been prepared by outstanding experts in their field for presentation and discussion by members. Morning and afternoon technical sessions have been arranged for November 10th and 11th, at which time members of the shipping and shipbuilding industries and allied trades, drawn from all sections of the country, will hear the following technical papers:

"The Design of Propellers" by John G. Hill of David Taylor Model Basin.

"Longitudinal Vibrations of Marine Propulsion Shafting Systems" by John R. Kane of Newport News Shipbuilding and Dry Dock Company, and R. T. McGoldrick of David Taylor Model Basin.

"Rivet Slip, Stress Distribution, and the Deflection of Ships' Hulls" by E. M. MacCutcheon of David Taylor Model Basin.

"Structural Tests on the Passenger Ship ss PRESIDENT WILSON—Interaction Between Superstructure and Main Hull Girder" by John Vasta of the Bureau of Ships, Department of the Navy.

"Some Case Histories of Shipboard Lubrication Problems" by Captain W. D. Leggett and Commander J. B. Ritch, Jr. of Engineering Experiment Station, Annapolis, Md., and George L. Neely of Standard Oil Company of New Jersey.

"Thickness of Steam Piping for High Pressure, High Temperature Service" by Henry C. E. Meyer of Gibbs & Cox, Inc.

"Notes on the Design of Hotel Services for Passenger Ships" by Eugene P. Worthen and William H. Muller of Bethlehem Steel Company, Shipbuilding Division, Quincy, Mass.

"Structural Design and Details of Longitudinally Framed Tankers" by David P. Brown, Chief Surveyor of American Bureau of Shipping.

"Investigation of Cargo Distribution in Tank Vessels" by Joseph H. McDonald and Donald F. MacNaught of Bethlehem Steel Company, Shipbuilding Division, Quincy, Mass.

Mr. J. B. Woodward, Jr., President of the Society, and President of the Newport News Shipbuilding and Dry Dock Company, will preside at the technical sessions as well as at the Annual Banquet which will be held on Friday evening, November 11th. Leading government officials and industrialists will also attend the Banquet, and a nationally prominent speaker will address the assemblage on a subject of current and timely interest. The Banquet will be open to members of the Society only. The annual presentation of awards will be made during the course of the Banquet.

On Saturday morning, November 12th, members and their guests will visit the United States Merchant Marine Academy at Kings Point for an inspection of that institution and to witness a football game during the afternoon between the Cadet-Midshipmen and Adelphi College.

The meeting will close with the very popular Dinner Dance of the Society which will be held in the Starlight Roof of the Waldorf-Astoria on Saturday evening, November 12th.

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Army Transport Conversions To Wisco At Portland

On a total bid of $609,220, Willamette Iron and Steel Company, Portland, Oregon, was awarded contract in October for conversion on the Army transports GENERAL H. B. FREEMAN and GENERAL M. F. PATRICK.

A recent personnel change at WISCO has transferred Lew Hallmark to the commercial division and placed B. J. "Bert" Marrinan, estimator, at the Hallmark desk in the ship repair division.

PLIMSOLL CLUB, Vancouver, B.C., Officers and Directors. Left to right: CAPTAIN J. S. THOMSON, Anglo-Canadian Shipping Company, vice-president; F. H. CLENDENNING, Empire Shipping Company, president; C. A. BLOW, Canada Shipping Company, secretary-treasurer; O. B. OMMUNDSEN, H. A. Borgerson, Ltd.; C. A. RICHARDSON, International Paint Company, directors. Other directors are C. McLean, Union Steamships, Ltd.; A. B. Pilkey, Northwest Distributors, Ltd., and J. A. Bird, Campney, Owen, Murphy and Company. With an expected 500 shipping men in attendance the initial meeting and banquet of the Plimsoll Club is set for November 18 at Vancouver, B. C.





B. J. MARRINAN, left, executive assistant; JESS CARSON, right, engineer, Willamette Iron & Steel Company, Ship Repair Division.



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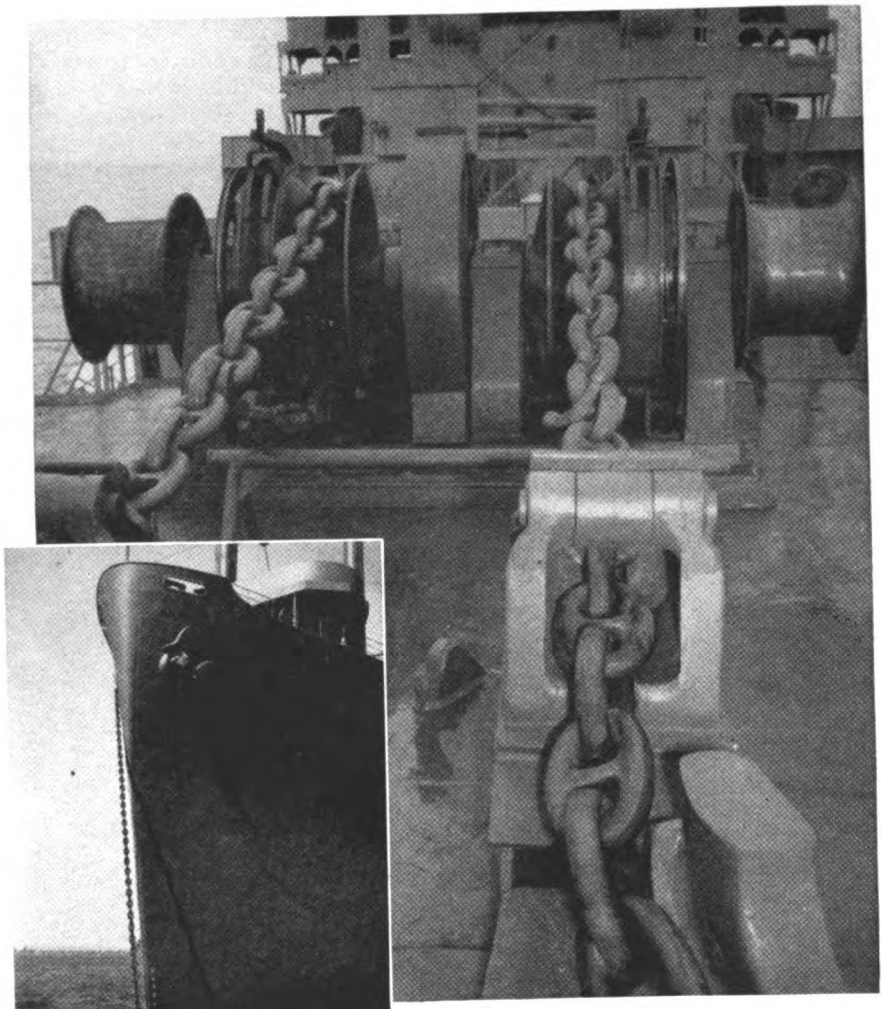
For Strength..

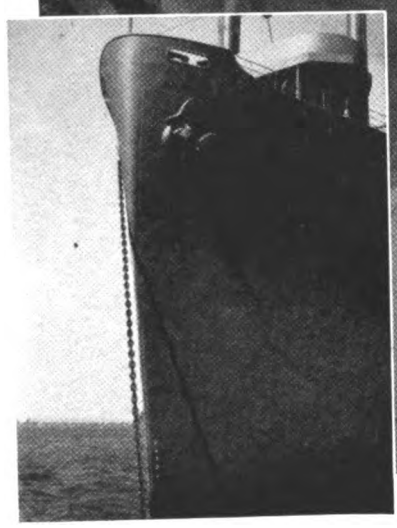
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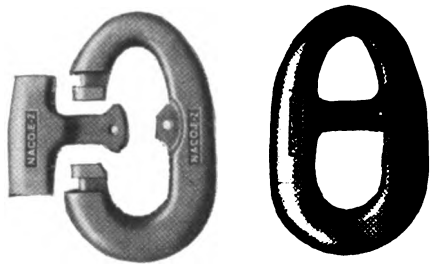
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Easy

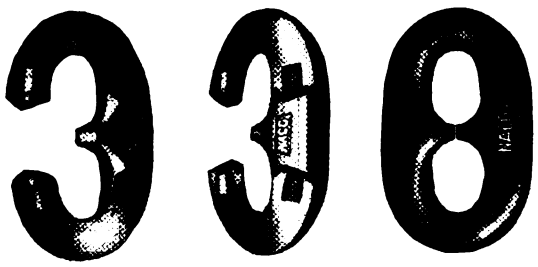
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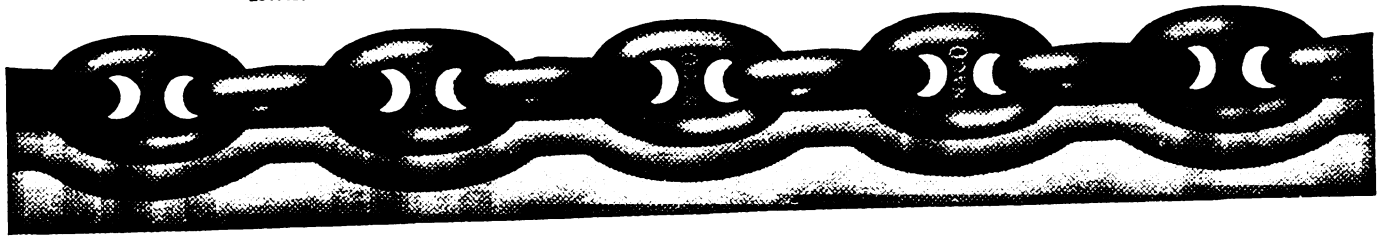
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Cleveland, Ohio

M&S Co.

ESTAB. 1868

NACO ANCHOR CHAIN

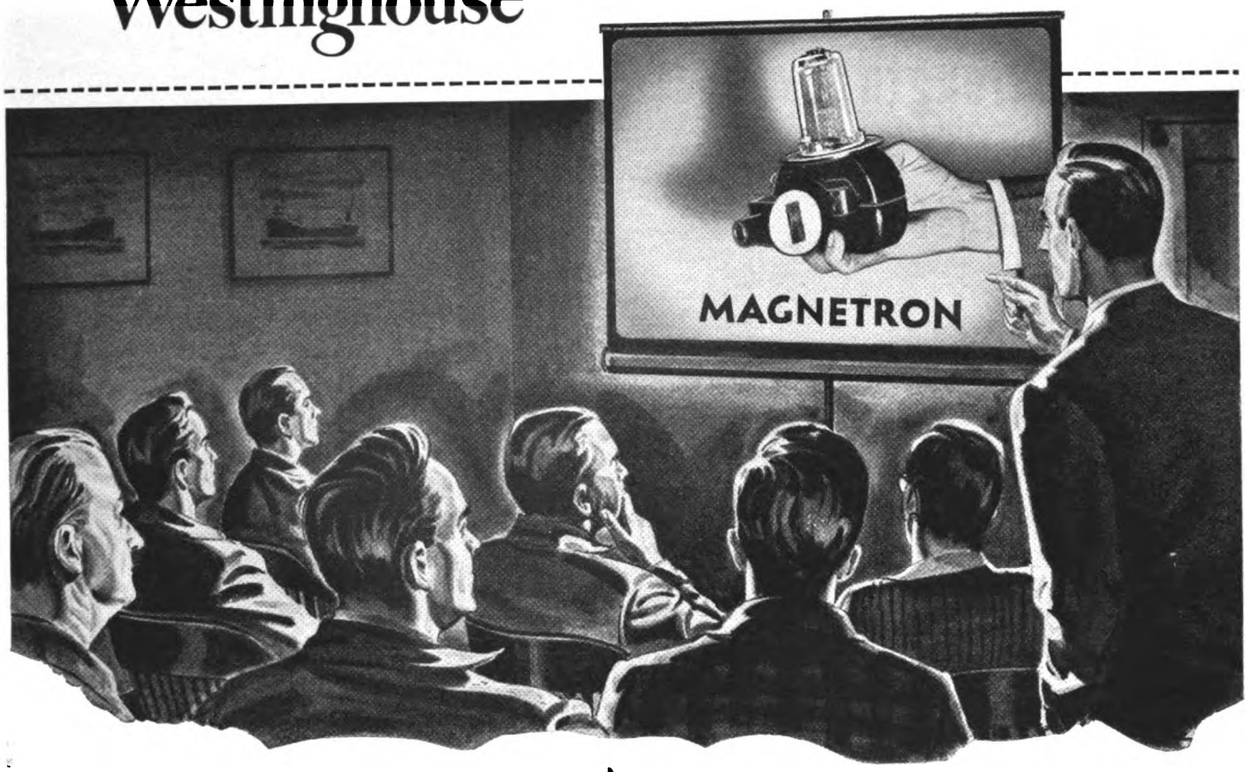
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Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

NOVEMBER, 1949 Vol. 44, No. 12

Official Organ of The Society of Marine Port Engineers, New York, N.Y., Inc.; The Society of Port Engineers, San Francisco; The Society of Port Engineers, Los Angeles; The Society of Port Engineers, Columbia River Area; The Society of Port Engineers of Puget Sound; the Port Stewards' Association of the Pacific Coast.

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Effects of Turning ATS Ships Over to the Navy

The transfer of the Army Transport Service to the new Military Sea Transportation Service under Navy supervision which began October 1st and likely will require until April, 1950, to complete, will seriously effect both privately operated shipyards and local supply houses, chandlers and manufacturers representatives.

Although in The LOG's opinion, Rear Admiral W. M. Gallaghan, USN, commandant of MSTS, is an intelligent, fair-minded officer, he will be bound by Navy regulations and habits. Under the ATS private repair yards have had all the work but with the Navy taking over it will be only natural for some of this repair work to be done in Navy yards to keep the men and officers busy. The policy at the start, according to Admiral Callaghan, will be to continue the use of private yards for repair work on the former ATS vessels. But for that policy to continue indefinitely is expecting too much of the Navy unless continual pressure is exerted.

Unless the private repair yards keep a continual watch and apply constant pressure it will be found that more and more vessels are going into Navy yards for overhaul to "save the taxpayers' money." The Navy has a bonanza in potential repair work on the ships it is acquiring from the Army and don't consider for a moment that the commandants of the Navy yards won't be pressing to get the business away from private yards.

The LOG will keep this subject alive for it is convinced that: 1) the private yards can do the repair work in less time and at less expense than the Navy yards; 2) that the private yards must be kept in operation for possible future emergencies; and, 3) the Navy has no business competing with private industry from which it draws its funds through taxes.

The plight of the local ship chandlers and manufacturers representatives cannot be solved by publicity and pressure on the Navy. Here they face Navy buying regulations that provide for centralized purchasing direct from manufacturers of equipment and supplies. It appears to us that only a threat of Congressional action can cause a change in Navy policy to prevent squeezing many small firms out of business.

The Navy is notorious among local suppliers for wanting a lot of service but seldom buying through chandlers or representatives. Only emergency purchases are made locally. Otherwise the Navy personnel must requisition the parts or supplies through a distant supply depot. And in some instances this requires five or six weeks we have been told.

The purpose of the Navy's centralized buying practices was to reduce costs but it is not as economical today as it was in wartime. Then, the Navy had the power of the Renegotiation Act to force manufacturers to eliminate all selling costs from prices quoted the Navy. Today, without that law, we understand that most manufacturers are quoting the Navy the same price for equipment and parts as would be quoted in New Orleans or San Francisco. Had the items been ordered by the Navy in one of the cities mentioned, the local representative would have made his profit, which he must have to provide the service the Navy frequently wants.

If the manufacturers wish to keep their representatives in the various ports healthy, they must join with them in working with the committees of Congress interested in aiding small businesses.

Manufacturers, too, have a problem of their own in dealing with the Navy. There is a tendency in the Navy yards to keep unnecessary personnel working by making equipment parts that should properly be bought from the original manufacturer. We know of one manufacturer who recently discovered that the Navy was duplicating his patented parts.

It came to light when the Navy wrote the manufacturer complaining of the parts purchased from him as being of "inferior quality and workmanship." The manufacturer checked his records and learned no such parts had been furnished the Navy, so he went to Washington and asked the Navy when they were purchased. There were some red faces among the Navy officers involved when the records revealed that the Navy had made the parts in one of its own yards. The manufacturer obtained a promise that it would not happen again.

While the foregoing may appear to be an attack on the Navy itself such is not intended. We have no quarrel with the Navy as a vital arm of our defense, but we do say that the Navy has no right to expand its non-military functions to a point where it eliminates private business, the source of its own income.

Constant vigilance is necessary to hold the Navy's bureaucracy within bounds. Publicity will be a powerful weapon in this battle and the manufacturers, ship chandlers and manufacturers representatives can count on The LOG publicizing the subject to the maximum.

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Sun Shipbuilding Low Bidder On Alexander Ships

Sun Shipbuilding and Drydock Co., Chester, Pennsylvania, was low bidder for construction of two 25-knot, 17,940 gross ton passenger-trailer ships proposed for service between San Francisco and Los Angeles by the Pacific Coast Steamship Co., headed by H. F. Alexander.

The United States Maritime Commission opened the bids at Washington, September 26th and announced it would take 30 days to review them.

Sun submitted a fixed bid of $10,604,-951 each for both vessels or $10,917,948 for one. It also submitted adjustable bids of $10,358,324 each for both and $10,664,-042 for one. The yard would produce the first vessel in 525 days and both in 600 days, according to its bid.

(Continued on Page 50)

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ONE OF THE SAFEST SHIPS AFLOAT . . .

SS AMERICA, flagship of the U. S. passenger fleet, is operated under Mr. Devlin's direction

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SAFETY ABOARD AMERICAN

PASSENGER LINERS

Accidents aboard passenger liners range from slipping on butter chips to bathroom bonanzas. Can we stop them?

By JONES F. DEVLIN
General Manager
United States Lines Co.*

Under ideal conditions, almost any ship can discharge its passengers safely at the end of a voyage.

Unfortunately, however, conditions are seldom ideal and not always normal. Every ship must be constructed and operated with the knowledge that it will encounter severe storms; that it may some time suffer damage by collision; and that fire may some time break out aboard ship while at sea, despite all precautions of Captain and crew. And under present conditions a final requirement is that the ship must be designed, having in view its possible wartime use as a naval auxiliary. This requires a high standard of resistance against damage from enemy attack.

The safety of a passenger ship depends upon its ability to meet any of these emergencies which may arise.

Safety, of course, is comparative. Travel on some ships is safer than travel on others.

Generally speaking, I believe that travel on American ships is safer than on foreign ships. This is because American designers work to higher standards and stricter regulations than foreign designers. This means that the American ships offer a greater margin of safety.

The possible margin of safety is greater than it was only a few years ago.

In the first place, present developments in radar, sounding gear, and fire detecting apparatus, and in the production of fire resistant materials, are such that under normal conditions the danger of collision or of undetected fire and its effect has been substantially reduced.

In the second place, we are building ships which have greater stability in damaged condition.

Many ships today are being designed with a view to conversion into troopships in case of war. War damage is, of course, not always preventable, but in order to reduce a ship's vulnerability to a minimum, we provide such vessels with all known preventive equipment and with a greater margin of stability than would normally be required for peacetime operation.

Thus the actual margin of peacetime safety is greatly increased.

History

In the spring of 1912 a large foreign flag passenger liner, supposedly unsinkable, sank with a heavy loss of life. This disaster resulted in a conference in London for the purpose of arriving at some international agreement on the method of subdividing ships' hulls so as to prevent another similar disaster.

The Convention resulting from the conference was signed, but due to the onset of World War I and for other causes it was never ratified, although many nations used it as a guide.

In 1929 another International Conference was held in London, and the 1929 Convention for Promoting Safety of Life at Sea embodied the conclusions reached. The 1929 Convention was ratified by all the 18 signatory nations, comprising most of the major sea powers of the world, and marked a significant forward step in the safeguarding of life at sea. Unfortunately, the standards set up by the 1929 Convention did not represent the best practice in shipbuilding as of 1929, but the best that could be agreed upon by the diversified interests concerned.

It was not until 1936 that the United States adopted the 1929 Convention, but the vessels built in the interim generally met its standards. The Convention was not sufficient for this country, since it applies only to ships in international trade, whereas this country had large passenger vessels operating in domestic trade. Also, the Convention has many exemptions for ships built prior to 1929.

A serious fire aboard a passenger ship in 1934 and the sinking of another vessel the following year, put further emphasis on the need for legislation, and the United States Senate ordered a subcommittee to investigate the two disasters and the then existing regulations governing the safety of ships. Legal requirements were found to be inadequate, and a technical committee was formed to make recommendations for raising the standards of safety requirements.

The findings and recommendations of the Technical Committee are embodied in a report known as "Senate Report 184." Basically, these rules cover all features of the construction and equipment of ships then existing and subsequently built. It establishes standards higher than those of the 1929 Convention. Senate Report 184 was never made law, but was adopted by the U.S. Maritime Commission at its formation in 1937, and compliance with its terms is necessary in order to obtain a government subsidy. The report also serves as a guide to American shipbuilders in general, as well as to those of some foreign countries.

The rapid advances in the science of Naval Architecture precipitated by World War II made it advisable to hold a third conference on safety of life at sea as soon

Our passenger liners are equipped with every navigational aid to improve their safety. The AMERICA is equipped with Raytheon Radar on the bridge and in the chartroom.



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*Presented before the Marine Section of the National Safety Council at Chicago.



Radiomarine Loran, echo-sounding depth finder, radio direction finder, Sperry's "iron mike" and gyro-compass all contribute to the safe operation of the AMERICA.

as possible. Delegates from 30 nations therefore met in London in April 1948, and prepared a Convention patterned after the 1929 Convention. Notable additions are a tightening of regulations on stability in damaged condition, a procedure to keep the 1948 Convention up-to-date, and a more realistic approach to the problem of fire prevention.

Subdivision

In the matter of subdivision, the requirements of the 1929 Convention and the Senate Report 184 are quite similar. Passenger ships are subdivided by a number of watertight bulkheads. These extend from the ship's bottom to the bulkhead deck, which is well above waterline. The more bulkheads a ship has, the greater the degree of subdivision and resultant safety. In practice, the number of bulkheads is determined by the length of the ship, since cargo holds and machinery spaces must be fairly large in order to be efficient. The more passengers a ship carries, the greater becomes the responsibility for the safety of passengers, with correspondingly less emphasis on cargo carrying. The degree of subdivision required to be provided depends upon the number of passengers a ship carries, the length of the ship, and the service it is in. The greatest degree of subdivision necessarily goes with the longest ships carrying the largest number of passengers. The minimum requirement for a ship to carry passengers is a degree of subdivision which permits damage to any single compartment, between two bulkheads, without the ship sinking. This provides some margin of safety, but if the damage occurs at a bulkhead it will cause two adjacent compartments to flood, and the ship will sink. To provide the necessary degree of subdivision to guard against this contingency, a passenger ship should be able to survive with two compartments flooded. Most of the liners built since the 1929 Convention are at least two-compartment ships, and some few of them are three-compartment ships.

Stability

The travelling public are inclined to believe that a vessel with a long easy period of roll is a safer ship than one with a quicker period. The opposite is true. A naval architect on a strange ship can make a rapid appraisal of her stability by timing her period of roll. The shorter the period, the greater margin of safety.

All modern ships while they are undamaged have enough stability to insure against rolling completely over, but the ships that seem to have a long slow roll of great amplitude and hang as if suspended before returning to the vertical have little reserve stability as a protection against capsizing. Ships with a long period may seem to some more comfortable in stormy seas, but not to those of us who know what it's all about.

Due to the lack of damage stability regulations abroad, numerous foreign vessels are designed with a minimum of stability, which results in the long rolls mentioned. The operators rely on careful operation, good seamanship, and good luck for safety. When damage occurs, however, such a vessel is quite likely to capsize, which inevitably involves serious loss of life, because such a disaster comes almost without warning.

Under the regulations adhered to in this country, the designers must favor safety in order to insure that the passenger is never to be placed in unnecessary jeopardy.

Damaged Stability

One of the greatest weaknesses of the 1929 Convention is its lack of control over the requirements for stability of a ship in the damaged condition. A ship needs positive stability to remain upright, and the flooding of one, two, or three compartments reduces the stability considerably. As mentioned previously, most ships, United States and foreign, are sufficiently well subdivided so that more than one compartment can be flooded without danger of sinking. However, the consequent loss in stability can be great enough to cause listing to such a degree that the ship is unsafe and may capsize, or so that it is impossible to handle the lifeboats. It is suspected that this is true of some foreign ships.

It is also suspected that as a rule foreign liners are not so stable as American ships, the former having such a small margin of safety or stability, that while they have sufficient buoyance to remain afloat when damaged, the resulting angle of list causes submersion of the bulkhead deck and rolling over, with eventual sinking with attendant loss of life.

The Senate Report 184 went well beyond the 1929 Convention in the matter of damaged stability. Positive stability is required when damaged, and safe limits of heel were established for the various conditions of damage, consistent with the service and the required degree of subdivision. A ship such as the AMERICA, built to and beyond the Senate Report, is capable of remaining afloat with three adjacent compartments flooded and could maintain a conservative angle of heel with two compartments flooded. This margin of safety is probably the greatest for any ship her size, and is what the travelling public should be provided with in all new vessels.

Structure

A modern ocean liner is an imposing structure, with anywhere from 10 to 30 thousand tons of steel required in its building. The lives of all aboard depend on the ability of this structure to remain sound under all conditions.

The inertia of this mass is such that in any direct collision, an opening to the sea is almost inevitable. Danger from collision and war damage can be guarded

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against only by ample subdivision and stability.

The hull and strength deck or decks must withstand the tremendous loads applied by the sea.

In order to insure proper strength under the worst conditions, designers calculate the loads in one case if the ship were supported in the center, with the ends relatively unsupported, and in the second case supported at the ends with the center relatively unsupported. This simulates the load to which a ship would be subjected if she were lifted by the crest of a wave in the center of her length, or alternately, supported only by wave crests at each end of her length. These loads are converted into stresses on the various parts of the structure and the ship is designed accordingly.

Structural failure can cause local flooding due to cracks or broken hatches, for instance, and can also cause a ship to break in half. In this country, the American Bureau of Shipping is the guiding agency in insuring adequate strength to the various parts of the ship's structure associated with allowable draft. In England, Lloyd's Register performs a similar function. Generally speaking, compliance with the rules of American Bureau and Lloyd's produces vessels of equally high standards. Some of the remaining countries use Lloyd's Register, while others have their own standards. The International Load Line Convention, held some years ago, resulted in regulations which had a unifying effect, and the resulting ships are for the most part structurally sound.

Fire

Fire is probably the greatest single threat in shipboard travel. The recent horrible fire on the Canadian steamer NORONIC is still fresh in our minds. Fire can sweep through a vessel, completely gut the interior, forcing passengers to abandon ship, and still leave the charred hulk tight, intact and in no danger of sinking. Or, so much water can be poured in a ship to fight the fire, that capsizing will result.

Elimination of Causes

The main cause of fire appears to be carelessness on the part of smokers and faulty wiring.

The problem of fire caused by discarded cigars and cigarettes cannot be solved except by fireproof construction.

The 1929 Convention dealt only briefly with safety requirements for shipboard electrical installations. The Senate Report 184 went considerably further, and in addition there is a continuing committee under the American Institute of Electrical Engineers to establish more specific guiding rules. "Recommended Practice for Electrical Installations on Shipboard" is a result of the work of this committee, and forms guiding principles which insure that the electrical equipment on American ships meets standards of safety equaled by only a few competing nations.

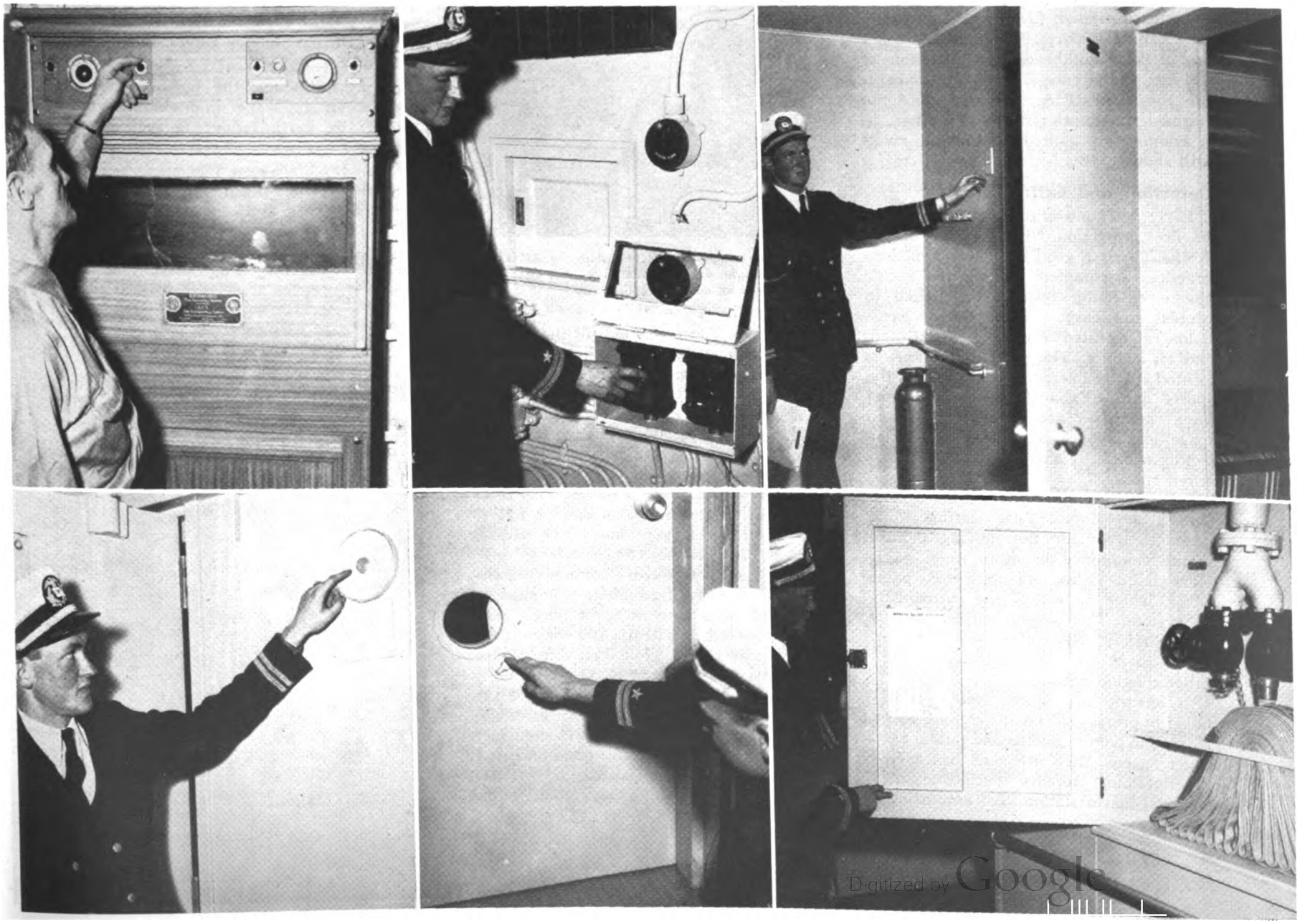
Incombustible Materials

Wooden joiner work throughout, and beautifully paneled spaces, so long a luxury on shipboard, are unfortunately, fuel for feeding fires. Chemical treatment of wood, while helpful, is not effective enough in preventing the spread of fire.

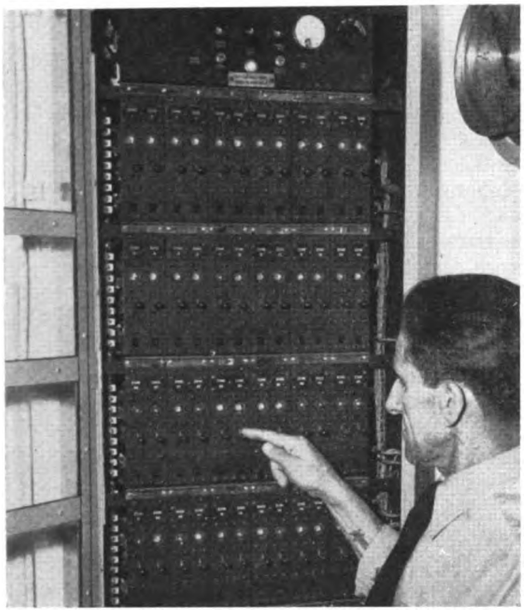
The Senate Report 184 went beyond the 1929 Convention in requiring partition bulkheads between staterooms to be made of material capable of withstanding temperatures of 1550°F. and having draft-stopping features. It further limits the thickness and amount of veneers to be used for decoration and specifies incombustible material for furnishings in many of the spaces.

The United States Liner AMERICA, designed to these rigid standards, had a problem in interior decoration that called

Fire detection and control aboard American passenger ships is shown in these pictures aboard the AMERICA. Fire detection cabinet gives visual and audible warning of fire. Fire screen doors and ventilating systems are closed from bridge. Fire screen doors can be closed locally or from bridge by breaking magnetic current which holds them open against spring tension. Hose holes in the doors allow fire fighters to battle a blaze while the door is closed to cut off drafts and retard spread of fire.



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Supervisory fire alarm annunciator reports fire in passenger spaces and indicates location.

for a new approach. New methods and new materials were necessary in order to meet these standards without sacrificing the beauty of the ship's public spaces. The result was a completely new architectural treatment of public spaces, which had excellent fire resistant qualities and were entirely in keeping with a vessel representing the newest practice in every respect.

Isolation

Further to limit the spread of fire, ships are divided into vertical zones by steel, asbestos insulated, fire-screen bulkheads. The Senate Report 184 limited the spacing of these bulkheads to a maximum of 131 feet. Adherence to these requirements on the AMERICA, however, has not harmed the interior decorative effect, as a comparison with her Atlantic rivals will show.

Detection and Extinguishing

Early detection is of prime importance in fire protection. The system of the AMERICA is a good example of modern practice. A complete audible and visible smoke detecting system is installed to protect the cargo 'tween decks, cargo holds, refrigerated cargo holds, paint room and oil lockers. The detecting cabinet is located in the fire control station on the sports deck. Exhaust blowers in continual operation are connected to each space, and smoke can be seen at the detecting cabinet if any exists in the monitored space.

The detecting system is combined with the carbon dioxide gas extinguishing system, except for the moving picture booths, emergency generator room, engineers' paint locker and stewards' paint locker, which have only the extinguishing system. This system consists of 109 Lux cylinders. The boiler room and main engine room are also protected by the carbon dioxide system.

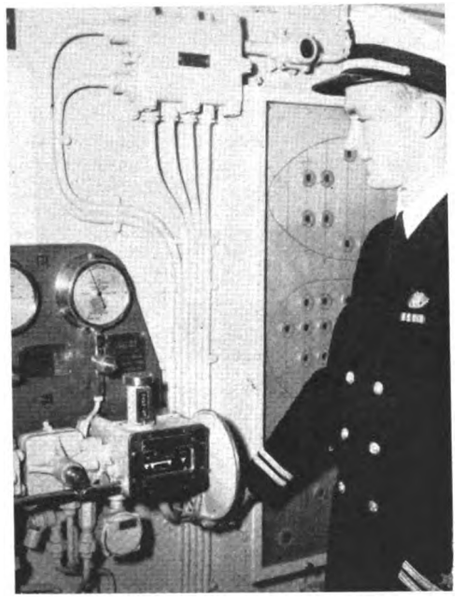
An electric fire alarm system is installed to protect offices, storerooms, lockers, motion picture booths and public passenger spaces. Each fire zone has a circuit containing mercury thermostats and a manual alarm station. An annunciator located in the fire control station automatically registers the zone in which any thermostat reaches 150°F. or in which a manual alarm switch has been operated.

American criteria of safety are constantly improving. The latest product of American standards and design is the new Superliner designed for the United States Lines Company and under construction at Newport News. While many particulars of this ship remain secret for security reasons, in every safety feature it represents an advance even beyond the high standards of the AMERICA.

Passenger and Personnel Accidents

On the subject of accidents to passengers and personnel, there is little to be said.

We read in mythology that Neptune can calm the waves and that he needs only one shake of his trident to establish authority over them. All I can say is that if he still has the power, he doesn't choose to exercise it very often.



Hydraulic bridge controls will close the AMERICA'S 55 watertight doors. Turning the disc in officer's hand closes all doors simultaneously.

There is also much talk of the halcyon days when everything, including the sea, was serene. I am told that this expression arises from a fable to the effect that the halcyon, which has been identified with the kingfisher, nested on the sea about the time of the winter solstice, and that the sea always remained calm during the nesting period. While I do not wish to be classified as a cynic, one cannot fail to notice that halcyon days are always spoken of in the past tense.

So no ship will ever maintain a completely even keel throughout a voyage on any body of water except a pond. And some passengers will neglect simple precautions necessary while on a ship. Hence accidents will continue to occur.

Accidents are difficult to classify. They are usually due to the carelessness of the victim who ignores the fairly evident fact that an ocean is not a mill pond and that decks are frequently aslant.

I do not believe that a description of any particular accident, or series of accidents, would be helpful in preventing them. Each accident is unique, and the best way to avoid accidents is to instruct both passengers and crew carefully so that they may avoid the most obvious dangers which exist from the very fact that they are not on dry land.

In this connection, we distribute to each passenger a notice, warning against actions which would obviously create danger for the person committing them.

With your permission, I shall read these rules to you.

"Your entire trip can be spoiled by a sprain, bruise or other minor injury.

We wish you to enjoy a safe passage and urge your cooperation by carefully observing the following precautions:

1. Do not run on the ship.
2. Do not allow children to run or play unattended or to sit or play on stairways.
3. Walk carefully over wet spots on the decks.
4. Do not smoke in bed.
5. Be sure cigar and cigarette ends and matches are extinguished and placed in the receptacles provided for them throughout the ship.
6. Do not throw overboard lighted cigar and cigarette ends or lighted matches as they may be drawn into open portholes or ventilators.
7. Do not discard refuse of any kind on the decks. Place it in the receptacles provided throughout the ship.
8. Do not remove safety hooks from furniture.
9. Always use the berth ladder to enter an upper berth, making certain that the berth ladder is securely in place.
10. Do not attempt to open or close portlights or deadlights. Call your room steward to do this.

Watertight doors can be closed by local hydraulic control. Warning bell warns passengers to keep clear. Door can also be operated manually either locally or from the deck above.



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11. Do not move about in darkened rooms. Make use of the lighting facilities.

12. Avoid holding on to frames of open doors. The ship's movement may cause the door to close suddenly on your hand or fingers.

13. Use the elevators for going from one deck to another. They are operated for your convenience.

14. Do not wear high heels when playing deck games.

The following precautions are especially important when the ship is rolling or pitching in bad weather:

15. Use the handrails in passageways, on stairways, and in bathrooms.

16. Hold on to safety ropes, handrails or secured furniture when crossing open foyers and passing through public rooms.

17. Do not stroll about the ship unnecessarily. Remain seated in furniture which is secured.

18. Brace yourself when sitting in a straight-backed chair.

19. If your chair should move in the dining room while at meals, hold on to the table—do not attempt to save table utensils or equipment."

Let's Be Sane as Well as Safe

I can tell you in all truth that the number of accidents on ships of the United States Lines and at the docks at which they are berthed are comparatively few. I have no hesitancy in mentioning at the outset in answer to the requirements of the subject assigned to me that in fixing responsibility for accidents it is my opinion that in most instances the one person responsible is the victim himself; secondly, that any steps taken to avoid a repetition of a specific type of accident should be carefully weighed to avoid making the mistake of having the cure become more harmful than the disease and thirdly, that in recommending safety precautions let us be certain that the number of precautions taken, both in the way of rules and mechanical devices, shall not become so numerous and involved as to unnecessarily interfere with the efficient operation of our business.

I think that in approaching this subject we should be realistic to the extent that we see the entire operation with *all* its problems and not become so absorbed with the safety idea alone and the prevention of accidents to the detriment of all other operational matters. In other words, never let us cease to be sane about this subject.

It is my opinion that there are no "unusual accidents" but rather that all accidents are unusual. Insofar as the ships of the United States Lines are concerned, they are all modern vessels flying the American flag and are safer from every standpoint of construction and operational mechanism than the ships flying any other flag in the world. And if you will excuse my American enthusiasm for a moment, I would like to add that the officers and crews on American flag ships are as efficient as you will find on the ships of any country.

As far as the prevention of accidents to passengers and crew members is concerned, there are safety rules in connection with the operation of these ships and there are safety devices to protect personnel and passengers in spite of their own occasional thoughtlessness.

I hope I will not be misunderstood when I express the opinion that if we overdo this matter of safety precautions, and mind you I am referring only to those things intended to protect a person against individual accidents caused by his carelessness and not those devices that protect the entire ship, we will be encouraging in many instances greater carelessness on the part of the individual and are likely to increase accidents.

It is human nature to become increasingly more careless and less on the alert when a person knows that there is some mechanical device or gadget that will save him the strain of thinking for himself in his own protection.

Case Histories

In preparing myself for this meeting, I spent many hours studying the case histories of accidents to passengers and personnel during the last ten or fifteen years.

The cases I reviewed, the various different types of accidents, who was responsible, what was done as precaution against repetition seemed in each instance to be obvious. I also believe that by and large the variety of accidents and resultant corrective action was the same as you will find in your own files. Common sense dictated the corrective steps to take.

I am frank to add, however, that except for a few instances, the victim, if he could be induced to be frank and outspoken would accept full responsibility for what happened to him. It was also obvious that if it were not possible to collect some easy money as a settlement for damages for a run of the mill *mishap*—there would not be so many so called *accidents*.

There were other cases where the individual's own responsibility was so clear that I would like to cite a few specific cases.

On one of our ships, a crew member working in the pantry developed a partial paralysis to the right side of his face and double vision. When he made his claim for damages, his attorney pointed out that this man, while at work in the pantry had been exposed to a flow of cold air from a defective air conditioning unit directly above him. Prompt investigation disclosed that there was a defective air vent, that it was located directly above where this man worked, and that it was reasonable to assume that it could have been a contributory cause of his condition. However, the point I wish to bring out is this; no other person worked immediately in this area—the only one feeling this draft was the man I just mentioned. Now, this is the amazing part of this so-called accident, if you choose to call it that—at no time previous to his reporting to the hospital did he report that he was in a draft and he did not mention the defective vent to any of his fellow workers, much less to any officer aboard ship. Further, upon examination, it was obvious that the defect was so minor, having been caused by a loose screw, that the victim himself, had he taken the trouble, could have tightened it, thus repairing the defective vent in a matter of minutes.

Now I ask you as one sincerely interested in the health and well being of every officer and crew member sailing on a United States Lines ship, what is it we can do to prevent a recurrence of a so-called accident of this type and who was responsible?

Not to avoid trying to answer the question, I feel that something more might be done to educate crew members so that they will at least take some action to correct conditions of which they alone are familiar to prevent any harm coming to themselves.

Might I add that in spite of the facts in this case, when suit was brought, the case had to be settled for a given sum of money.

An Act of God

Before mentioning the next case, I think you will all agree that regardless of the number of safety precautions taken to avoid accidents to passengers and crew members, there is one factor that man has not yet found a way to correct and I refer to the slant of the decks when the sea is rough or when there is a swell. While everyone knows that the ocean is not a level concrete slab and while big passenger ships are the most modern hotels, their foundations are unpredictable oceans and that the companionways, public rooms, staterooms and decks are not at all times level.

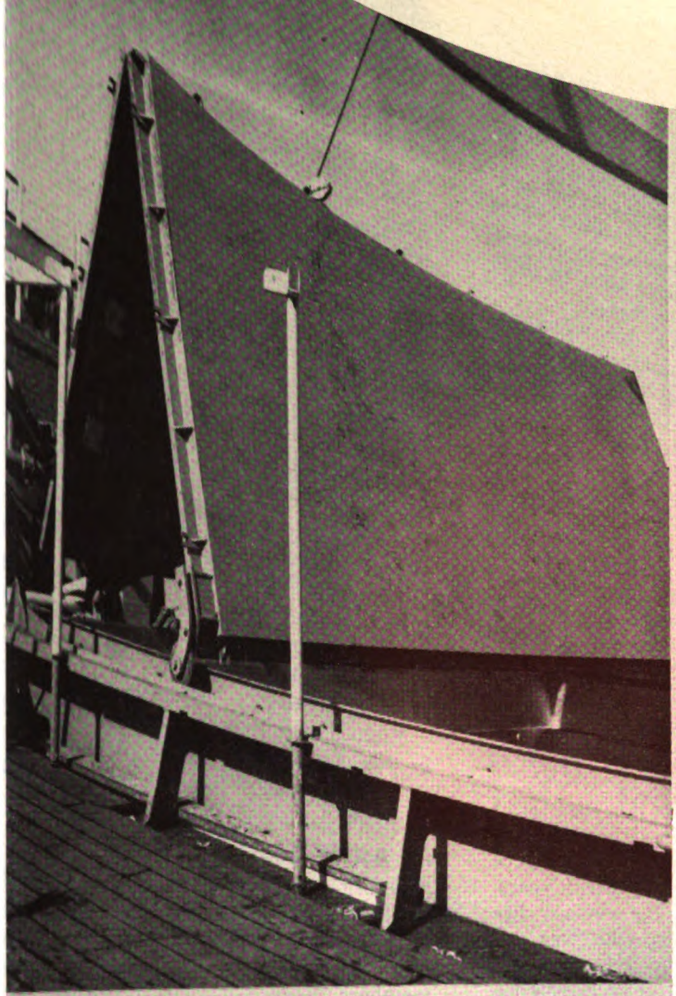
Granting that a first time passenger is not accustomed to a slanting floor, it would seem that no amount of precaution on the part of the shipping company, the ships' officers and the crew could equal precautions taken by the passenger himself.

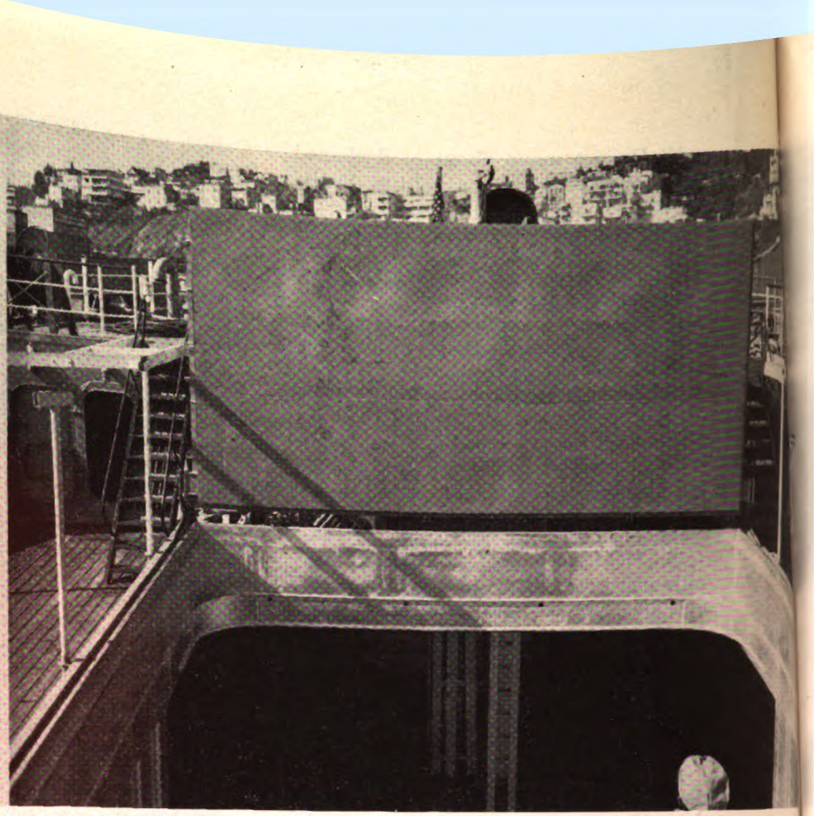
If a passenger's legs feel unsteady, it behooves him to take care and yet when someone does fall he immediately sues the company where, in all righteousness, he should sue God and His mighty ocean.

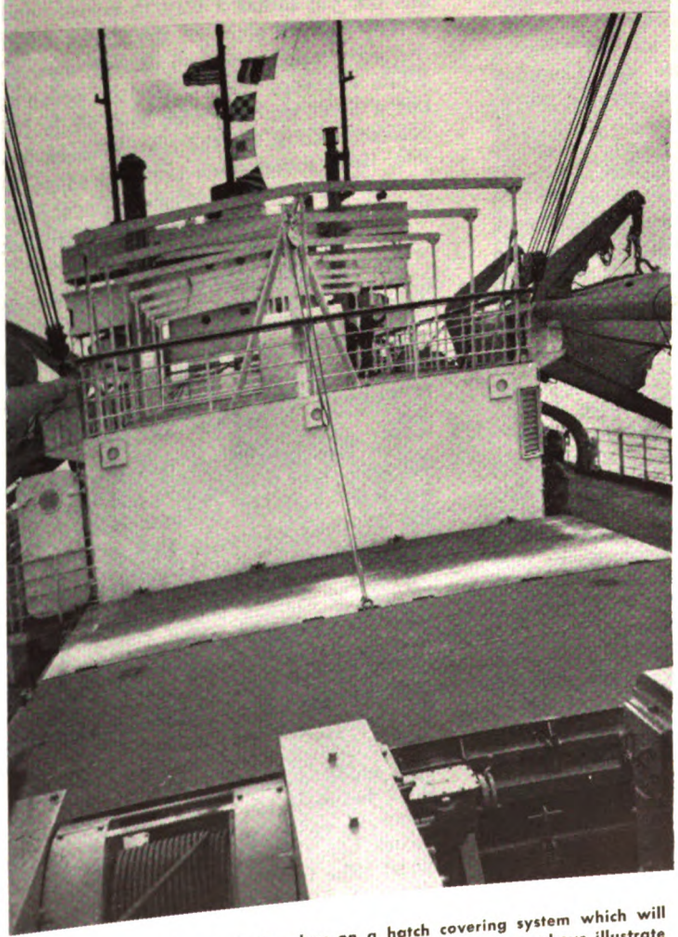
The case I have in mind is that of a woman passenger who reported to the chief steward that she had tripped over the sill of the bathroom adjoining her stateroom. She claimed in her suit for damages because of an injured wrist that the vessel was recklessly operated, was out of control, that it lurched and jerked and made a sudden twist causing the door between her cabin and the bathroom to swing with such force that it struck her, threw her down, injuring her wrist. She further alleged that the ship's doctor had incorrectly diagnosed her injury as a sprain when it was a break, that the doctor was unqualified, unskilled and incompetent and that the ship should have been equipped with full X-

(Continued on Page 64)

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American President Lines put the okay on a hatch covering system which will save untold hours by its simplicity and easy operation. Pictures above illustrate how the hatch is opened or closed with a turn of the winch. When closed the hatch is weather-tight.

APL TO SPEED CARGO WITH NEW TYPE HATCH COVERS

All twenty-four hatches on APL ships at New York Ship to be equipped with Seaboard-Mege covers.

The three American President Lines' passenger and cargo vessels now under construction by the New York Shipbuilding Corporation at Camden, N.J., will embody the latest advances in design, construction and equipment. Final plans for the PRESIDENT JACKSON, PRESIDENT ADAMS, and PRESIDENT HAYES, were evolved from a combination of the operator's long experience and a series of analytical studies of methods and equipment aimed to provide greater protection to cargoes while simultaneously increasing the speed of loading and unloading.

The American President Lines is well-known for its painstaking efforts to deliver cargoes in perfect condition. It is equally well-known for its desire to make traveling on APL ships an enjoyable experience for passengers.

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Equipment that provides safety for cargo and pleasure for passengers is being incorporated in the new vessels. One of the devices contributing to both is the Seaboard-Mege quick-opening, watertight hatch covers. These have been in use for a considerable length of time and affidavits attest to the fact that no damage to cargo has occurred from water leakage aboard vessels equipped with these covers.

In an official test conducted last spring, the Seaboard-Mege covers proved to be nine times faster to open and close than the standard hatch board type. Only three men are required to open or close the Seaboard-Mege covers, two at the covers and one at the winch controls.

It is this speed with which the Seaboard-Mege covers may be opened and closed that will contribute to passenger satisfaction as well as to faster cargo handling. In the ports it serves, the American President Lines often has the problem of loading important last-minute cargoes. Frequently the opening and closing of old-style hatches causes long delays past the departure time, irritating passengers and their friends who have come to bid them bon voyage.

Delays in sailing will be minimized by the Seaboard-Mege quick-opening hatch covers to be installed on all eight hatches on each of the three new vessels.

Estimates by shipping men of savings to be obtained through the faster opening and closing of Seaboard-Mege covers range from $10,000 to $50,000 annually, depending upon the type of vessel and the trade in which it is engaged. Additional substantial savings are gained by the elimination of tarpaulins and maintenance costs, important cost factors with the hatch board covers currently used.

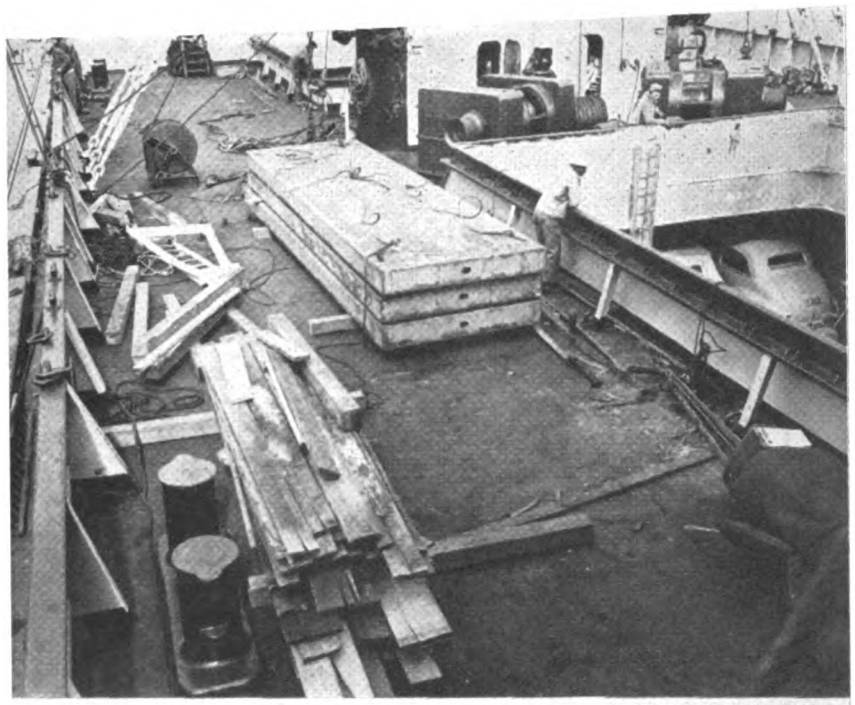
The covers are designed to fit the deck machinery arrangements and space limitations to provide efficient operating conditions. The largest is 32½x20 ft.

Greater safety for personnel is another advantage of the new covers. Hazards to crew men or stevedores in handling pontoons on steel decks, shifting beams, metal or wooden boards, are completely eliminated. The cover surface in the closed position, is free of obstructions and completely flush. One operator sets up a badminton court for passengers atop the Seaboard-Mege cover.

In port the Seaboard-Mege covers need not be dogged down for they are completely watertight when simply dropped over the hatch, without further work by stevedores or crew. Only when the vessel is ready to sail are the covers dogged down. Cargo is fully protected against sudden rain squalls and water damage in port as well as at sea.

The Seaboard Machinery Corporation of New York, designers and manufacturers of the Seaboard-Mege quick-opening, watertight weather deck hatch covers, are now making 'tween deck covers to further improve cargo handling time and re-

(Continued on Page 37)



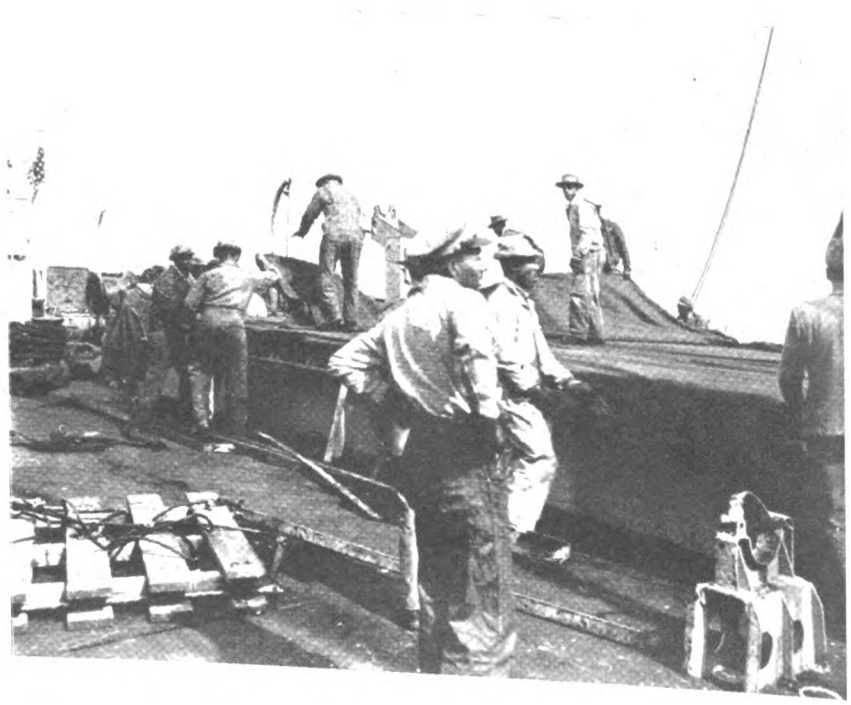
This typical scene of cluttered decks with hatch covers continually in the way is not for APL. New Seaboard-Mege type hatch covers remain permanently out of the way.

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No more wasted hours fitting hatch covers into place. New quick-opening hatch covers are dropped in a matter of seconds.

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Eleven men are struggling with a tarp in this picture. With the new covers going aboard the three APL ships now under construction tarps are only spread when the ship is proceeding to sea.

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HINGTON Reporting

By The LOG's Own Correspondents

Job Opportunities in Shipbuilding

The outlook for shipbuilding in the United States is uncertain, but even if there should be no increase in shipyard employment in the long run there will still be openings for some new workers each year.

This, in part, is the advice contained in a proposed new supplement to an occupational handbook being prepared by the Occupational Outlook Branch, Bureau of Labor Statistics, Dept. of Labor for the Veterans Administration.

Although the report is a preliminary one, some observations are worthy of note, such as:

The average hourly and weekly earnings of shipyard workers tend to be higher than those of most manufacturing workers, averaging in the first half of 1949 $62.30 for an average week of 38½ hours or about $1.60 an hour—compared to averages for all manufacturing of $53.60 for 40 hours, or $1.35 an hour. The report noted however the uncertainty of steady employment in private shipyards.

Safety campaigns have aided in bringing the injury rate down to 26 disabling injuries for each million manhours worked in 1948, about 50% greater than the rate in manufacturing as a whole, but well below that in construction.

Employment outlook depends on the amount of new building and the size of the naval and merchant fleets to be kept in repair. In this respect many of the factors affecting the Government program in shipbuilding are difficult to evaluate in advance. The state of Federal finances, attitude of Congress toward economy, military and technological considerations and the expanding role of aviation as it may affect naval construction, all play their part in the ultimate determination of the amount of shipbuilding.

The report mentions legislation pending in Congress aimed to promote a private shipbuilding industry of 150,000 workers, (This refers to H.R. 4190 introduced by Rep. John Allen of California which would distribute shipbuilding among all three coastal areas) and indicates there should be a minimum Navy Yard employment of 100,000 or a total shipbuilding work force of 250,000 as compared to far less than 200,000 in mid-1949.

Before listing the various types of occupations in shipbuilding, the report states:

"Even if there should be no increase in shipyard employment in the long run, there would be openings for new workers each year because of . . . death . . . and retirement . . . In the near future the large pool of available experienced men who have lost shipyard jobs but who have seniority rights for rehiring will have priority over new workers . . . On the other hand, some openings for new inexperienced workers have already arisen. In welding, for example, an occupation in which great numbers trained in shipyards during the war were laid off, and would have been expected to overcrowd the field, new workers with no welding experience were being taken on by some shipyards in early 1949."

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Long Range Shipping Legislation

The shipping industry's hopes for a long range shipping legislative program brightened after the House of Representatives returned from a vacation, and authoritative sources felt that passage by the House before recess appeared good.

By the end of September it was learned that the HMM&F Subcommittee on Maritime Affairs had tentatively approved the following provisions of the program:

Extension of construction differential subsidy to all vessels operating in the foreign commerce of the U.S.

Provision for limited liability on vessels which have not less than 200 passenger accommodations, and certain other requirements.

Permits trading-in of obsolete vessels, in both foreign and domestic trade, at 12 years instead of present 17 years of age.

Permits funds deposited in the construction reserve fund to be used for the reconstruction and reconditioning of old vessels, as well as for building or buying new vessels, and for liquidation of purchase-money indebtedness. There is also a provision added for expenditure of funds deposited in a construction reserve for reconstruction or modernization of vessels for exclusive use on the Great Lakes, including the St. Lawrence River and the Gulf.

Fixes the rate for accelerated depreciation for an unsubsidized operator at 10% per annum on vessels of 20-year life expectancy, and permits subsidized operators to make additional deposits in their capital reserve funds as depreciation charges upon approval of the Maritime Commission.

Provides that the operator of a reconstructed operating subsidy vessel is permitted to require the USMC to recompute the life expectancy of such vessels, and that the depreciation charges on such vessels for capital reserve fund deposits will be computed on the life expectancy so determined.

USMC Maritime Promotion Program

A substantial maritime information and educational promotion program, to be directed by the U.S. Maritime Commission, has been put into tentative shape and hearings have already been held before Bureau of the Budget officials.

While the financial size of the program is still a guarded secret, it is known to be on a comparable basis with the information programs of small Government agencies.

Presentations to the Bureau of the Budget were made by both Commissioner Joseph Carson, who is the sparkplug of the program, and by Acting Chairman (Vice Chairman) Grenville Mellen, who is keenly interested in having the Commission resume the maritime promotion which was discontinued several years ago at the direction of a Congressional Appropriation Committee.

The program envisages the appointment by the Commission of a National Advisory Committee for Maritime Promotion. Members would be paid a per diem rate for attending meetings, as well as travel expenses. This Committee may be named later this month.

It is expected that Stephen C. Manning, Jr., now special assistant to the Commission, and former director of information before the Commission's information program was curtailed, will be in charge of the new program.

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Special Labor Assistant Proposed to Settle Pacific Coast Disputes

A joint resolution (H.J. Res. 350) introduced into the House of Representatives and referred to the House Committee on Education and Labor would authorize the Secretary of Labor to appoint a special assistant to aid in settling labor disputes affecting the Pacific Coast, with assignment at the Dept. of Labor's Regional Office in San Francisco. The measure was introduced by Rep. Anderson of California.

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Panama Canal Tolls Study to Be Made by Budget Bureau

Coincidental with President Truman's proclamation to defer the effective date of Panama toll increases (from 90c to $1 a laden ton) to April 1, 1950, he authorized Budget Bureau Director Frank Pace, Jr., to make a study of the organization of the Panama Canal. It is assumed Budget Director Pace will report back to the President before April 1, and that several other Federal agencies will assist in the work.

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Mortgage Insurance Broadening Proposed

Rep. Henry Jackson (D. Wash.) has introduced a bill (H.R. 6132) which would broaden the scope of Title XI of Federal Ship Mortgage Insurance of the 1936 Merchant Marine Act. Under provisions of the bill the insurance of loans or ad-

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WASHINGTON Roundup

vances of construction money for commercial vessels would be extended to any such vessels used in any foreign trade.

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"In Fact as Well as by Title"

In an off-the-record meeting with bureau chiefs and other top officials of the USMC before leaving for a six week trip to Portugal, General Philip B. Fleming, new USMC Chairman, quoted from a letter by President Truman to himself in which the President pointed out that Fleming under terms of Reorganization Plan No. 6 was "in fact as well as by title" the head of the USMC.

The General also repeated the President's remarks that the Commissioners are "hard working public officials," and that "an adequate appreciation of the importance of the Merchant Marine to the Nation is lacking . . . and is much needed today. Not enough of our people seem to realize that the U.S. is a maritime Nation. I hope the Commission will take the lead in a program to correct this situation."

With these words, General Fleming asked for "loyalty to this agency from everyone in it. You are responsible for good administration, and I shall back you up," he departed for Portugal and the USMC was off for a fresh start, infused enthusiasm and a steady rudder.

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American Shipping Presses for Suez Canal Tolls Reduction

After joining with the General Council of British Shipping in urging lowered Suez Canal Tolls in early August, the National Federation of American Shipping on behalf of the industry also petitioned Somerville Pinkney Tuck, American representative on the Suez Canal Company's Board of Directors, the U.S. Council of the International Chamber of Commerce, and the Secretary of State.

In its request to Mr. Tuck, the NFAS pointed out the increased traffic at Suez; the prospective increase of traffic; the current earning record and prosperous financial position of the Canal Company, and the tremendous increase of American-flag ship transits over past years.

The request for lowered tolls also disclosed that American ships now pay about $6,000,000 a year in Suez Canal tolls, and that transits of such vessels have increased tenfold until today they represent between 15 and 20% of Suez transits.

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Bland Appoints Ten Special Subcommittees

Heralding the beginning of a House investigation into maritime matters, Judge S. O. Bland, House MM&F Committee Chairman, has appointed 10 special subcommittees to investigate every phase of American shipping. The subcommittees and the matters they will look into are:

(1) Investigation of Alaskan shipping, to determine upon a long range shipping solution, Chairman Frank W. Boykin, (D. Ala.); (2) Army and Navy in commercial shipping, to determine how much operation is justified and what restrictions might be imposed, Chairman Edward J. Hart, (D. N.J.); (3) trans-isthmian canal, the desirability of building such a new Canal, Chairman Donald L. O'Toole, (D. N.Y.); (4) domestic shipping, determine the need, types of vessels and how such trade may be promoted, Chairman S. O. Bland, (D. Va.); (5) Puerto Rican shipping, to survey the problems of transportation between that island and the U.S., Chairman Frank D. Boykin, (D. Ala.).

(6) Fisheries and wildlife conservation, all problems and matters pertaining thereto, Chairman Clark W. Thompson, (D. Tex.); (7) American shipping in foreign aid programs, a continuing review and survey of both administration and operation of U.S. foreign aid programs affecting a degree of employment of U.S. Flag vessels, Chairman Edward J. Hart, (D. N.J.); (8) reserve fleets, to study all problems affecting the National Defense Reserve Fleet, Chairman Edward J. Hart, (D. N.J.); (9) Coast Guard and Merchant Marine Schools, to study the curricula of CG and MM Academies, Chairman Herbert C. Bonner, (D. N.C.); (10) port facilities, shipbuilding and ship repair yards, all matters pertaining thereto, Chairman Edward A. Garmatz (D. Md.)

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Heard in Washington

That Budget Director Frank Pace has told USMC Chairman of objections to the Long Range Legislative Program, principally that it provides discriminatory tax privileges and extends additional direct and indirect subsidies at additional cost to the Government . . . That a massive amount of documentary evidence of foreign discriminations against American shipping has been compiled by shipowners, to be presented to USMC.

That Harvey Klemmer's recall (former USMC employee and chairman of a committee that drafted Postwar Planning Report) as Shipping Attache to American Embassy in London will be asked of State Dept . . . That Arnold Bernstein Co. has received nearly 20,000 voluntary requests for low-cost passenger accommodations on the North Atlantic and is urging USMC to hurry bids on alteration and modification of two former troopers.

That President Truman has written USMC Chairman Fleming urging prompt consideration of reduction in expenditures, and avoidance of unemployed seamen now supposed to be about 30% and still increasing . . . That ship operators are urging Chairman Fleming to look into the steadily expanding Japanese Merchant Marine whose operations now seriously affect U.S. Flag operations in the trans-Pacific trades.

That USMC has cracked down hard on any attempt of U.S. lines to sell C-type ships foreign, latest case being Waterman's desire to sell two C-2's to the Dutch . . . That NFAS has assisted Munitions Board to set up a Stevedoring Advisory Committee and one of first projects may be standardization of stevedoring contracts . . . That National Defense Transportation Association expects to establish national annual award for outstanding transportation service by an individual . . . That Senator John J. Williams (R. Del.) is angry at the USMC for delays in unbilled accounts and has urged among his colleagues that the Commission conduct its affairs in a more businesslike manner.

That Lynn E. Mote, Washington Vice-President of Association of American Shipowners, has been named Assistant Counsel of HMM&F Committee. Almost at the same time Ex-U.S. Senator Joseph H. Ball (R. Minn.) was appointed to take Mote's place. Mote was formerly an FBI agent and had been later with Senator Millikin of Colorado.

Mr. Ball, in assuming the vice presidency of the Washington AASO office, declared it was imperative to keep the U.S. Merchant Marine sound and strong in that it was vital to national defense. Appointment of Mr. Ball put to an end Washington rumors that AASO would close its Washington office.

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Military Aid Legislation Carries 50% Provision

The position of the Congress of the United States in relation to American shipping's desire that U.S. Flag ships carry at least 50% of all government financed cargoes is growing firmer each month.

In the recently enacted military aid program, the Senate and the House both wrote provisions into the bills before them guaranteeing American shipping at least 50% of such military aid cargoes. If anything, the MAP bill 50% clause is stronger than the one in the ECA Act, in that it covers all materials procured under the program rather than only U.S. exports and imports, and finally states that a minimum of 50% must be shipped on U.S. commercial vessels, thus removing from any such quota carriage which may be performed by military vessels.

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APL to Speed Cargo With New Type Hatch Covers

(Continued from Page 35)

duce costs. On trunk hatches, where handling of covers and beams is slow and hazardous, 'tween deck quick-opening covers eliminate most of these difficulties. In the stowed position they nest up against the bulkhead fore and aft or athwart ship in either a vertical or horizontal position, secured by safety locks controlled from the weather deck. The only manual operation required is for one man to fasten the lifting bridle and secure it to the boom. The raising or lowering time is about one minute. Foolproof and safe, these covers take up but a small amount of hatch space required for stowage.

Currently Seaboard is installing these new design 'tween deck hatch covers aboard several vessels.

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BETHLEHEM SUPERTANKERS INDICATE POSTWAR PROGRESS

Large, fast, highly-efficient tankers designed for low-cost transportation





Yes, this is on a tanker. It's the owner's suite on one of the Bethlehem-built tankers from the Quincy yard for The Texas Company.



Nor was the crew short-changed when it came to designing quarters. Here is the officers' lounge aboard the PENNSYLANIA, built for The Texas Company.

Characteristic of the 28,000-ton supertankers Bethlehem Steel Company's Sparrows Point and Quincy shipyards are constructing, the ss JAHRA is an outstanding example of American postwar shipbuilding skill and achievement.

The first 28,000-tonner completed in Bethlehem's present program, the JAHRA was delivered to the Gulf Oil Corporation several months ago. Since then to October 1, 1949, *four* other supertankers have been delivered by the Bethlehem yards. These vessels are the BURGAN, OLYMPIC TORCH, PENNSYLVANIA and TEXAS. *Six* additional tankers, namely, the OHIO, OLYMPIC STAR, KENTUCKY, WORLD LIBERTY, CAPSA and OLYMPIC LAUREL, have been launched and are scheduled to be delivered this year. Thirteen other tankers of the same size are on order, all to be completed by early 1951.

All of these vessels are similar in basic design, general arrangement and machinery installations but some differ in certain details, according to the particular desires of the various owners. For instance, superstructure details and crew and owner accommodations vary according to the practices of the particular operators. In most major details, however, the vessels are similar and a description of the JAHRA should serve to give the general characteristics of this class.

Principal Characteristics

Bethlehem's naval architects and marine engineers, in designing this class, recognized the urgent need of the petroleum industry for large, fast and highly efficient tankers capable of transporting oil products on a low-cost basis to and

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SS PENNSYLVANIA, one of the many tankers now being built by the Bethlehem Steel Company, Shipbuilding Division. This one was built for The Texas Company at Bethlehem's Quincy yard.

from the farflung corners of the globe. The Bethlehem built supertankers have been designed, engineered and constructed to fulfill this need.

Keel for the JAHRA was laid at the Bethlehem Sparrows Point Yard on July 19, 1948, and she was launched on March 9, 1949. On June 2 and 3, 1949, she successfully completed her sea trials and was delivered. Her construction established a new standard for the yard, and her delivery time of 326 days represented a notable achievement considering the fact that she was the first vessel of her class.

The largest ship ever built in the port of Baltimore, the JAHRA is a three-island, single-screw, turbine-driven tanker with curved, raked stem and cruiser stern. Machinery and crew's quarters are located aft and deck officers' accommodations and navigation spaces in a midship deck house.

Cargo Space

The cargo space is divided into 30 compartments, the full depth of the hull, by oil tight bulkheads extending from the bottom shell to the upper deck. There are eleven transverse and two longitudinal bulkheads, the latter continuous and running from the forward cofferdam to the after end of the fuel tanks, with deep brackets beneath the upper deck in dry cargo spaces forward and beneath the upper deck aft. A double bottom width water-tight tank top in the machinery space is subdivided for wash water, cofferdams, lube-oil sump and fathometer sump. The fore and aft peaks are used for ballast only.

Ballast or emergency long-voyage fuel oil is carried in the fore deep tanks. Dry cargo is carried in the tween-deck spaces above, which are served by a 14 ft.10 in. x 18 ft. hatch with steel cover, on the forecastle deck, and a similar hatch with wood covers, on the upper deck. The forecastle is used for carrying dry-cargo and also houses the carpenter shop and lamp room. Boatswain's stores are below the upper deck. Mate's stores, paint locker and linen lockers are in the bridge space on the upper deck.

The stem is of rolled plate construction with welded plate breast hooks and the stern frame is cast steel made up in sections. The rudder is of the streamlined, partially-balanced, double-plate type, with forged stock and rolled-steel trunk.

Longitudinal framing is used for the hull, with equal spacing of transverses, and with flat plate connections on all longitudinals at transverse bulkheads. The shell longitudinals in the bottom, side shell and decks are inverted angle sections graduated in size as required. Transverse framing of conventional design is used at both ends of the vessel.

For maximum deadweight and ease in cleaning, bulkheads are of the Bethlehem-Frear fluted type with sufficient stiffness to permit elimination of bulkhead stiffeners except for the plate webs across the fluting.

Welded Construction

Welding has been used extensively throughout the vessel, with riveting confined almost entirely to eight seams of the shell plating, the upper deck stringer angle, and two seams of the upper deck plating. All deck houses and enclosures are of welded construction.

The upper deck through the main portion of the hull is framed longitudinally, with transverse framing in the peaks. Transverse framing is used in the poop, forecastle and all superstructure decks with the exception of the bridge deck

Principal Characteristics of the ss JAHRA

Length overall	624 ft. 9⅜ in.
Length between perpendiculars	595 ft. 0 in.
Breadth, molded	84 ft. 0 in.
Depth, molded, to upper deck at side amidships	44 ft. 0 in.
Draft to designed waterline, molded	33 ft. 0 in.
Deadweight, tons	28,000 Tons
Cargo capacity, bbls.	240,400 Bbls.
Bunker capacity, bbls.	14,400 Bbls.
Shaft horse power, max.	13,750 SHP
Propeller speed, max. r.p.m	103 RPM
Speed, fully loaded at sea, about	16½ Knots
Complement	64

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...achinery consists ...e, driving a four-bladed, solid ...ese bronze propeller of 22 foot ...meter and about 27 tons weight through double-reduction gears. This unit has a normal head rating of 12,500 shaft horsepower at 100 RPM. Steam is supplied to the throttle at 585 lbs. pressure and 840°F, with 28½ in. vacuum at the exhaust flange. The high-pressure turbine is of the combined impulse-and-reaction type. The low-pressure turbine is of the single-flow reaction type, exhausting downward to a main condenser athwartship below the turbines. Either turbine may be operated singly in case of emergency. An astern turbine, capable of providing ample torque for stopping and maneuvering the vessel, is fitted in the low-pressure turbine casing.

Two boilers of the two-drum, water-tube type are located on a flat in the machinery space above and forward of the turbines. They are fired with oil burners operating under forced draft from two blowers, each with a capacity of 20,000 cu. ft. per min. at a static head of 16.65 in. of water. One blower is sufficient for normal full-power operation of the ship. Economizers are located between the boilers and the uptakes. Steam-jet soot blowers are provided for both the economizers and the boilers, and steam type air heaters are furnished for each boiler.

Boilers

Each boiler has 6710 sq. ft. of heating surface, including water walls, and each economizer 4970 sq. ft of heating surface. The boilers are designed for continuous operation with 600-lbs. pressure and 850°F at the superheater outlet. Normal rated capacity of the boiler is 47,500 lbs. of steam per hour. Maximum rated capacity is 65,000 lbs. of steam per hour at 675 lbs. pressure and 865°F at superheater outlet, which is in excess of maximum power requirements and sufficient to permit generation of the tank-cleaning system at full speed. The superheater has a normal capacity of 44,000 lbs. of steam per hour, the superheater 3500 lbs. per hour.

For port condition the internal desuperheater is rated to handle a maximum of 60,000 lbs. of steam per hour with the outlet temperature not exceeding 600°F, and the pressure drop not exceeding 120 lbs. per sq. in.

In addition to the internal desuperheaters in the boiler drums, there is an external desuperheater for emergency service. This desuperheater is of the surface absorption type and is rated to handle 21,000 lbs. per hour of 575 lbs. G, 560°F steam, and in conjunction with a reducing valve is arranged to deliver steam at 120 lbs. G with a temperature between saturation and 405°F. This unit is a standby for the 120 lb. pressure system when the low-pressure steam-generator system is inoperative.

Superheated steam, at full boiler pressure, is supplied to the main turbines and the two 400-KW generator turbines. Desuperheated steam, also at full boiler pressure, is supplied to the main feed-pump turbines, fire and Butterworth-pump turbine, and the cargo-pump turbines.

An electrically operated combustion-control system automatically regulates the fuel and air supply to the steam generators to meet the fluctuations in the steam demand.

Condensers

One single-acting, two-stage ship's service air compressor having a capacity of 95 CFM of free air at 125 lbs. G pressure is installed. There is also one single-acting, single-stage control air compressor with a capacity of 14.2 CFM at 80 lbs. G. The control air compressor furnishes the operating medium for various air-operated regulating valves. A hand-pump is used for starting a cold boiler with diesel oil.

The main condenser handles only the exhaust steam from the main propulsion turbines. Two independent auxiliary condensers are provided, one for each turbo-generator. The auxiliary condensers also handle excess auxiliary exhaust both at sea and in port.

In addition to the one main and two auxiliary condensers, there is an atmospheric exhaust condenser and hotwell for the low pressure steam generator system, having about 645 sq. ft. of cooling surface. This condenser handles 20,000 lbs. per hour of exhaust steam and 10,000 lbs. per hour of drains at atmospheric pressure.

There is also an atmospheric exhaust condenser for the cargo-pump turbines, having about 1530 sq. ft. of cooling surface and capable of condensing 52,000 lbs. per hour of steam at atmospheric pressure. This condenser is directly above the cargo pump turbines, and condensate drains from the condenser flow by gravity into condensate drain tank from which float-operated condensate and drain-transfer pumps send discharge to the deaerating feed water heater.

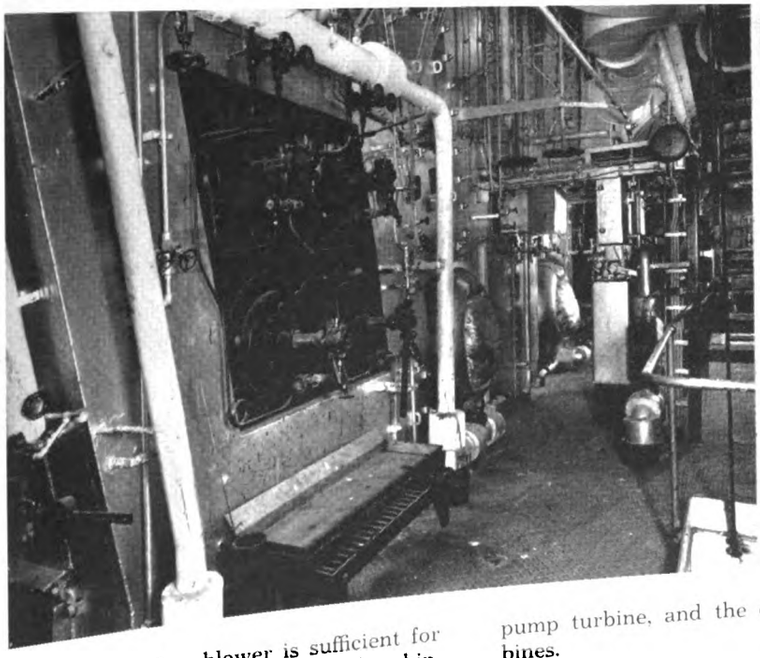
Motor-driven centrifugal pumps supply circulating water for the condensers and the main circulating pump also supplies the lubricating-oil coolers. In case of failure of the main circulating pump, there are emergency connections to the main condenser and lubricating-oil coolers from the atmospheric exhaust condenser circulating pump and the fire and general service pump.

Twin-type, two-stage air ejectors serve the main condenser and auxiliary condensers.

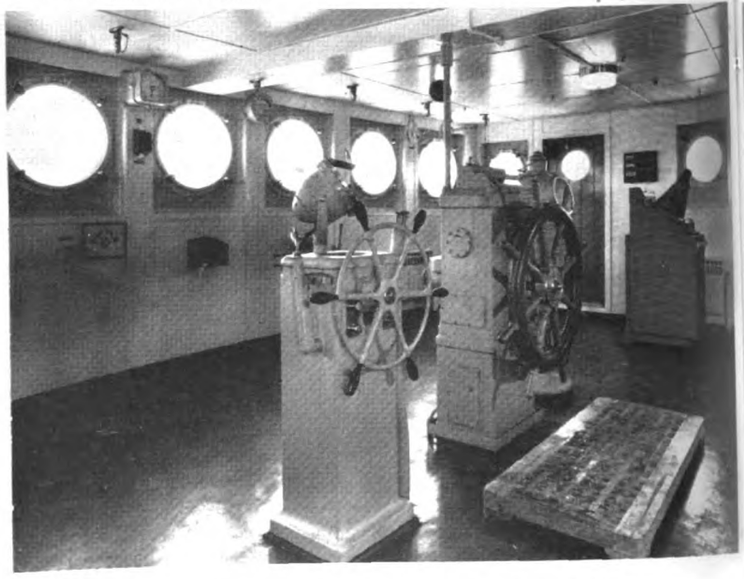
Low-Pressure Steam Plant

A low-pressure steam-generating plant is provided to handle all steam services which might otherwise cause contamination of the boilers. This system supplies saturated steam at 120 lbs. G to the cargo-oil and fuel-oil tank-heating coils, the fuel-oil heaters, the cargo stripping pumps, the deck auxiliaries, the steam

Boiler room of the ss JAHRA, built for the Gulf Oil Company by Bethlehem Sparrows Point Shipyard in Maryland.



Wheelhouse of the ss JAHRA has space to spare as well as the latest in navigational equipment.



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heating system, the Butterworth heater and other similar services.

The low-pressure steam-generating plant includes a low-pressure steam generator which is rated to deliver 35,000 lbs. per hour of saturated steam at 125 lbs. G pressure when supplied with steam at 350 lbs. G pressure and fresh water feed at 200°F. At lower evaporation rates, the generator is supplied with steam from the 125 lbs. high-pressure bleeder line.

The low-pressure steam-generating plant also includes a drain cooler, atmospheric condenser and hotwell, steam-driven low-pressure feed pumps and various controls. The atmospheric condenser hotwell is divided into two compartments, one serving as an inspection tank and the other as a surge tank from which the low-pressure feed pumps take suction.

Exhaust from the various services supplied by the low-pressure steam generator is returned to the atmospheric condenser, making a complete cycle without directly contacting any part of the main condensate, feed, steam, or exhaust systems.

The feed system is completely enclosed, insuring absolute deaeration of the boiler feed water.

The main and auxiliary condensers are furnished with two vertical motor-driven centrifugal condensate pumps for each condensing system.

The main and auxiliary condensate pumps discharge through the air ejector inter and after condensers, gland exhauster condensers, first-stage feed heater and drain cooler, and deaerating feed-water heater.

Feed Heaters

The combined first-stage feed heater consists of a horizontal straight-tube unit having feed heating, gland leakoff condensing and drain-cooling sections combined within a single shell. Bleeder steam from the low-pressure turbine is used for operation of the first-stage feed heater. Condensate from the discharge of the main and auxiliary condensate pumps is combined after leaving the air ejector condensers and then sent through the combined first stage feed heater unit.

The deaerating feed heater has an air-operated spill valve for by-passing excess condensate into the 32-ton distilled-water storage tank in the machinery space, and it is also equipped with an overflow trap discharging into this distilled-water tank. This heater operates on auxiliary exhaust from the machinery space which is augmented by bleeder steam from the high-pressure turbine. The auxiliary exhaust main is fitted with unloading valve to the auxiliary condensers and to the atmosphere. Clean steam drains are admitted to the deaerating heater.

Make-up feed is delivered from the distilled-water tank to the hotwell of the contaminated steam condenser, or by means of an eductor, to the deaerator. Three turbine-driven main feed pumps are available, any one of which is capable of supplying both boilers at maximum capacity. The main feed pumps take their suction from the deaerating heater and discharge to the boilers via the economizers. Flow control is obtained by the use of air-operated regulator valves in the discharge, and pump governor valves on the steam supply. Suitable provisions are made in the feed and condensate systems for salinity measurement, chemical analysis, and treatment of the boiler feed water.

Automatic Stand-By Pump

Two vertical, motor-driven fuel-oil service pumps, and one vertical rotary fuel oil-transfer pump are available in the machinery space. Suitable strainers, heaters, control valves, meters, recirculating lines, etc. are provided in the discharge to the burners. Two storage tanks and two settling tanks are located just forward of the machinery space and two fuel-oil or ballast tanks forward.

The latter are served by a transfer pump in the forward pump room. A transfer and loading main on the deck connects the forward and aft systems. In the forward pump room is also a fire, bilge, and clean ballast pump.

Lubricating oil is supplied to the main reduction gears via combined gravity and settling tanks. Two motor-driven vertical lubricating-oil rotary service pumps are available. Provisions are made for automatic operation of the stand-by pump upon failure of the operating unit. These pumps draw oil from the reduction-gear sump tank and discharge to the gravity and settling tanks via two lube-oil coolers arranged in parallel, each with sufficient cooling surface to serve the vessel at full power. The main turbine governor system is supplied by these lubricating oil pumps and is arranged for shut down of the main turbines in event of failure of the lubricating-oil system. Two lube-oil purifiers, each of 350-gal. per hr. capacity are provided. Continuous purification or batch purification of oil is possible. A hand pump is also available for transfer of oil to the gravity and settling tanks.

Low-Pressure Distilling Plants

The ship has two single effect Bethlehem design low-pressure distilling plants, each complete with condensate pump, brine pump, air ejector and air ejector condenser, flow meter, salinity indicator and adjustable weir-type level controller. The distilling plants are of the horizontal submerged-tube type with internal vapor purifier and distilling condenser and with external condensate cooler.

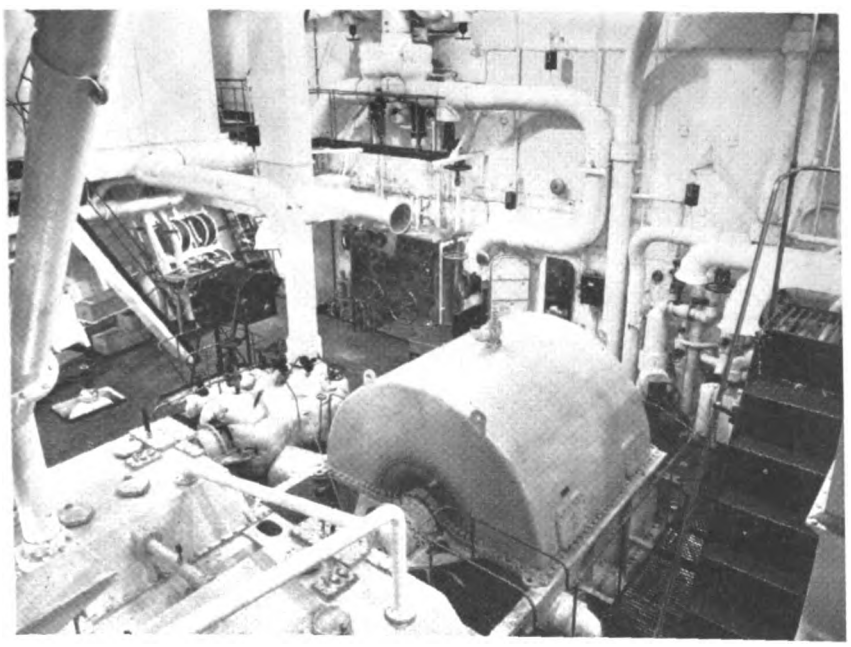
Each plant is rated to make 10,000 gal. per day of fresh water having a salt content not exceeding .25 grains per gallon from 85°F sea water when supplied with steam at 5 lbs. G pressure. For normal shipboard operation, each plant has a capacity of about 6000 gallons per day when using steam bled from the low-pressure turbine at 7 lbs. per sq. in. abs.

Each plant has a three-way solenoid-

A clean sweep of deck looking aft from the bridge on the Texas Tanker PENNSYLVANIA.



Main Engineroom of the JAHRA which has Bethlehem-built turbines which deliver 12,500 shaft horse-power.



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stalled in the discharge line. pump discharges to the ...ormally ...er main, but is connected to the indicator in such manner that when the salinity of the distilled water exceeds 25 grains per gallon, the solenoid is tripped and the water is automatically discharged to the bilge.

The distilling plant cycle is as follows: Sea water for cooling purposes is supplied to the distilling condenser after passing through the condensate cooler. Evaporator feed is taken from the overboard discharge line of the distiller condenser, and directed through the tubes of the air ejector after-condenser into the evaporator-shell feed-distributing pipe. Brine from the evaporator-shell flows through a weir-type level controller and is discharged overboard by the brine pump. Vapor, generated in the evaporator-shell, passes through a vapor separator to the distilling condenser. The condensate pump takes suction from the distilling condenser and discharges through a cooler to the ship's tanks.

Steam drains from the evaporator tube nest discharge to the auxiliary condensors through a float-controlled drain trap. Drains from the air ejector after-condenser discharge to the condensate drain tank.

Machinery Space Pumps

Pumps in the machinery space include, in addition to those previously mentioned, a motor-driven centrifugal bilge and ballast pump, a turbine-driven centrifugal fire and Butterworth pump, a motor-driven centrifugal fire and general service pump, a motor-driven centrifugal sanitary pump with 300-gal. pressure tank, two motor-driven centrifugal water-service pumps, two motor-driven turbine-type wash-water pumps with a 300-gal. pressure tank, and a motor-driven turbine-type potable-water pump with a 200-gal. pressure tank.

The after quarters are served by separate wash and potable water systems. Wash-water is carried in the inner bottom tanks and potable water is carried in two 37.5 ton tanks built into the ship's structure aft. The midship quarters are served by a single system for both potable and wash-water. A separate 30-ton storage tank, motor-driven turbine-type pump, pressure tank and heater are installed midships for this system. The midship system is inter-connected with the potable-water system aft for the transfer of water.

The fire-extinguishing system consists of a salt-water fire main running the length of the ship, with suitable fire stations at convenient locations. The fire main on the upper deck is also used for tank-cleaning purposes, in which case the water is led through the salt-water heater in the machinery space. Tank-cleaning is provided for all cargo tanks. Steam smothering is provided for all fuel oil and cargo oil tanks, the paint and lamp lockers, dry-cargo spaces, and pump rooms.

A fixed carbon-dioxide fire-extinguishing system is available in the machinery space, and cargo pump room, while hand fire extinguishers are supplied as required by law.

Two complete sets of refrigeration machinery are furnished for ship's stores refrigeration. Each set includes a compressor, condenser, receiver, strainer, dryers, etc. The units are so arranged that under normal operating conditions, maintaining a temperature of 0°F in the "Poultry and Meat Room," each unit takes a part of the refrigeration load. Under these conditions, one compressor-condenser serves the "Poultry and Meat" compartment and ice set, and the other serves the "Chill Room." Under light load conditions or emergency operation, either unit can serve all compartments. The refrigerant used is Freon-12, and the refrigerating plant has a normal capacity of 2.5 tons of refrigeration.

Cargo Oil System

The cargo oil system includes four groups of cargo tanks consisting of adjacent wing and centerline tanks numbered 1 and 2; 3 and 4; 5, 6 and 7; and 8, 9 and 10. Each group of tanks is normally served by an independent system including cargo pump, priming connection, etc. In the pump room aft are four 3500 GPM pumps driven by steam turbines supplied with boiler pressure desuperheated steam.

The cargo pumps are driven by 500-H.P. geared turbines operating with a turbine RPM of 4540 and a pump RPM of 1750. Compared to direct drive, this substantially reduces the diameter of the turbine wheel and at the same time increases the turbine efficiency at normal operating conditions.

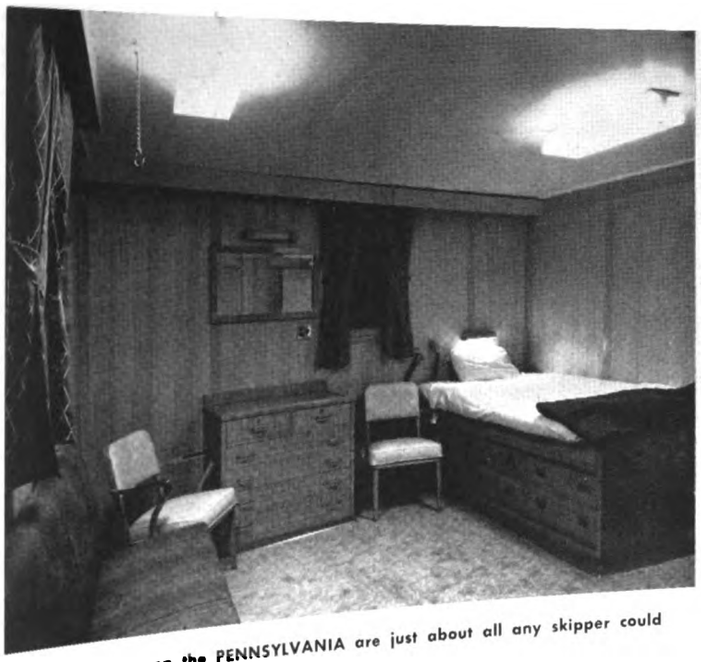
There are four vertical duplex steam driven stripping pumps in the pump room, each having a capacity of 500 GPM. There is also a steam reciprocating cargo pump room bilge pump.

Provisions are made for ballasting the cargo oil tanks with salt water.

The cargo system is designed for carrying petroleum products in bulk with flash point above 150°F. All tank hatches are vented via pressure-vacuum relief valves and the vents, arranged in groups, terminate well up on the masts with flame arresters near the open ends.

All fuel oil and cargo oil tanks are fitted with heating coils. The steam drains from the tank-heating coils as well as other drains aft, which may become contaminated, are led to the inspection tank section of the low-pressure steam generator's atmospheric condenser in the machinery space.

Other miscellaneous machinery-space clean drains are led to the 200-gallon condensate drain tank which discharges to the deaerating feed-water heater by means of drain transfer pumps.





An office like this one the master uses on the new Texas Tankers would make most company presidents envious.

Master's quarters on the PENNSYLVANIA are just about all any skipper could ask for.

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Partial List of Manufacturers and Their Equipment Aboard the SS JAHRA

Bethlehem Steel Co.	Main turbines, low pressure distilling plants, atmospheric condenser, first stage feed-heater drain cooler, lube oil coolers, salt water discharge strainer, hawse pipes, oil strainers, lube oil strainers, sanitary salt water discharge strainer, hawse pipes, propeller, tail shaft, line shaft, stern frame, rudder stool, wire rope.
Foster-Wheeler Corp.	Main boilers.
Todd Shipyards Corp.—Combustion Equipment Div.	Todd Hex-Press oil burners.
Warren Steam Pump Co.	Reciprocating and turbine driven pumps, motor driven pumps.
Westinghouse Electric Corp.	Turbine driven pumps, rudder bearings, turbo generators, motor generators, switchboards and transformers, motors.
J. S. Coffin, Jr., Co.	Turbine driven pumps.
DeLaval Steam Turbine Co.—IMO Div.	Lube oil service pumps, fuel oil service pumps, fuel oil transfer pump.
The Leslie Company	Pressure regulators, pump governors, low-pressure steam control valves, temperature regulators, whistles.
Pilot Marine Corp.	Salinity indicator, distilling plant salinity indicators.
Baldt Anchor Chain and Forge Division	Anchors and anchor chains.
American Hoist & Derrick Co.	Cargo winches and warping winches.
Welin Davit & Boat Co.	Life boats and davits.
Carrier Corp.	Refrigeration plant.
Sperry Gyroscope Co.	Gyro equipment, automatic course recorder.
Bludworth Marine	Fathometer.
Selby-Battersby	Floor covering.
Washington Aluminum Co.	Accommodation ladders and gangway.

Under normal conditions the high-pressure turbine glands will be self-sealing and will supply steam for sealing the low-pressure turbine glands. For starting and maneuvering gland steam is supplied both the high-pressure and the low-pressure turbine glands via a manually controlled sealing and unloading valve from the auxiliary exhaust system. The turbo-generator glands are sealed with auxiliary exhaust steam. The gland exhaust from both the main and generator turbines is led to gland exhauster condenser.

Lifting pads and chain hoists are provided over the auxiliary machinery units to facilitate repairs, and for lifting parts of the main turbines and reduction gears.

Two 400-kw., 450-volt, three-phase, 0.8 power factor, 60-cycle, A.C., geared turbo generators, one of which is a stand-by unit, supply power for the ship's auxiliaries, and, at 115 volts, through transformers, for lighting and I. C. service. The electric galley is operated at 220-volt A.C. current.

Diesel Generator for Cold Ship Starting

In addition, a 75-kw., 450-volt, A.C. diesel generator is available for emergency power and for cold ship starting. This is driven by a six-cylinder diesel engine. Upon failure of the main generator voltage, the diesel generator will start and effect a bus start transfer. Three switchboards are used, including a forward switchboard in the midship house.

All three-phase motors are of the squirrel-cage type, single or two-speed as required, and are fitted with sealed bearings. The usual electrical alarm circuits are fitted and, for the engineer's alarms, are brought together at an audible and visual consolidated alarm panel on the main gage board.

A 460-gal. diesel-oil storage tank is furnished for the auxiliary diesel generator. The engineer's workshop is equipped with storage bins, a workbench, a lathe, a drill press, a grinder, and a shaper.

Ventilation air is supplied to the engine room by two 20,000 CFM axial blowers. Exhaust of an equal amount is provided by similar blowers located in the outer stack. There is also a combination exhaust and escape trunk from the aft end of the machinery space.

Air to the boiler room is supplied by two 20,000 CFM axial fans; the exhaust is by natural air movement through the outer stack casing and the boilers.

The cargo oil pump room is supplied by a 10,900 CFM centrifugal blower. Exhaust from the bilges of this compartment is furnished by a specially constructed axial-flow fan. The forward pump room is normally ventilated by natural means with a supplementary steam jet exhauster as a positive means of removing accumulated gases. The after quarters are ventilated by one large system and several small auxiliary systems. The large system supplies 11,600 CFM to the various staterooms and living spaces. The auxiliary systems provide a total of 13,000 CFM to galley and commissary spaces, various service rooms, storage spaces, and steering engine room.

The midship quarters are supplied by one system delivering 5,750 CFM, similar to the system for the after quarters. Exhaust is by natural means.

Navigating Equipment

The steering gear consists of one double-opposed hydraulic ram acting on two athwartship cylinders and driving the rudder through blocks in a double tiller. A gyro compass is fitted in addition to the ordinary standard compasses. The vessel is also equipped with gyro-pilot automatic steering control, echo depth-sounding system, hand-operated sounding machine, electric revolution indicator and rudder angle indicator systems, both with indicators in the wheel house, and a continuous 30-day course recorder.

Engine and docking telegraphs are electrical. Included in the console-type radio communication equipment are short-wave and intermediate-frequency transmitters, a smaller emergency transmitter, a main and emergency receiver of low intermediate frequencies, a communication receiver of intermediate and high frequencies, and a crystal receiver; also a radio direction finder and automatic S.O.S. receivers. The vessel is also equipped with commercial radar.

Two cargo winches are located forward, one steam mooring winch is fitted amidship and one aft. There are two king posts, forward, each with a 5-ton, 46-ft. boom; two amidship, each with one 4-ton, 36-ft. boom and one 4-ton, 32-ft. boom and two aft, each with a 3-ton, 42-ft. boom.

A horizontal compound-geared windlass with two gypsies and two wild cats is used in handling the two stockless 16,345-lb. bower anchors, separately or together. A spare anchor and a stream anchor are also provided. The anchor chain is 2-11/16-in. Di-lock forged steel.

The life-saving equipment includes four 24-ft. oar-propelled life boats with hand-operated mechanical davits, two aft and two amidship. Each boat will accommodate 37 persons.

Fire-proof joiner construction is used throughout, with marine veneer-faced panels for bulkhead partitions and wall sheathing, and metal studding and furring. All panel joints are sealed and covered with metal strips. Interior joiner doors are of metal, and the furniture and interior fittings are either metal or other fireproof material. Deck covering is magnesite except in galley and pantries where non-slip tile on top of cement is used.

Owners and Crew Quarters

The appointments are to the owners' customary high standards for officers and crew. Sleeping quarters for deck officers, steward, radio operator and quartermaster are in the midship deck house. Engineers' staterooms and mess rooms for officers, petty officers, and crew are located aft. A recreation room for the crew is also provided aft. Chilled drinking water is available in convenient locations.

On the upper and poop decks aft are the galley, refrigerated and provision stowage, and baths. A hospital with bath is located on the boat deck. Accommodations on the upper deck for the engine room crew are on the port side, those for the deck crew on the starboard side. A steel fore-and-aft gangway with subway grating panels is fitted from the poop to the bridge and from the bridge to the forecastle.

The JAHRA is built to the highest class of the American Bureau of Shipping and Lloyds Register of Shipping under their special survey and classification for carrying petroleum products in bulk, and conforms to the regulations of the U.S. Coast Guard, the U.S. Public Health Service and the Panama and the Suez Canal authorities.

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NFAS Issues 2nd Annual Flag Cargo Services Booklet

National Federation of American Shipping is distributing copies of its second annual issue of U. S. Flag Cargo Services, to shippers, freight forwarders, and others engaged in the nation's foreign and domestic trade.

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Photo, Courtesy Lawrence Barber, The Oregonian.

VESSELS of the Coastwise Line in the Alaska trade meet in the outer Portland harbor, the outbound ss JOHN CROPPER on the left, the inbound ss JAMES M. CANNON on the right. In the background the railroad drawbridge crossing the Willamette River. In the upper left hand corner the Port of Portland owned drydocks.

WORLD TRADE COMES TO ALASKA

By GEORGE M. HENDERSON
Assistant Vice President, First National Bank of Portland
Chairman, Alaska Committee, Portland Chamber of Commerce

Alaska, a half century ago the scene of one of the most dramatic pages in the history of American exploration, has in the past three years announced new trade and travel ties which may mean more to territorial development over the years than did the discovery of gold. Yet outside of those ports and people directly involved, this significant shift in Pacific Coast trade routes has come about with little public attention.

Air travel led the way three years ago, when what has developed into one of the country's model non-scheduled airlines, General Airways, commenced direct cargo and passenger service from Portland to Alaska's major cities. Beginning on a modest schedule, the DC-3 equipped line has averaged nearly three flights to Alaska a week since January, 1947.

But what appears to have been kept a secret in many mainland quarters—despite wide publicity and advertising within Alaska—is the fact that Coastwise Line, an Oregon corporation, in September, 1948, inaugurated direct scheduled steamship service connecting Los Angeles, San Francisco and Portland with the ports of Western Alaska. Despite dire prophesies of failure put forth by some older firms who claimed they had been serving all of Alaska at a loss for years, Coastwise announced that Portland-to-Alaska rates would be no higher than the existing Puget Sound-to-Alaska tariff.

The first year's experience has been very good. New ports are served each trip, as cargo offerings dictate, and this fall Coastwise president William T. Sexton announced the outright purchase of two Liberty type ships for the Alaska service, augmenting its chartered tonnage.

Although most people in the states may have taken little note of these facts, they have a pretty positive meaning to Alaskans. They mean that now every week thousands of tons of cargo arrive at Alaskan ports from shippers in Oregon and California who previously had no means of serving Alaska direct.

During the nineteenth century ships from Oregon, California and even the east coast of the United States were familiar on Alaska's coast, their crews bent on bringing home sea otter and other valuable furs. Later canneries were established along the entire North Pacific and Bering Sea coasts and on nearby islands, and ships and crews from Astoria were important among those engaged in that phase of Alaska's commercial development.

Oregon's tie with Alaska became even closer when a Federal District was established, and government of the then newly purchased land was placed under the laws of the State of Oregon, with Salem as legislative headquarters. But our country's interest in Alaska continued to be limited to the coastal fringe until 1897 when that great stimulus to exploration—discovery of gold—changed the course of history in North America.

Clambering aboard almost anything that would float, the crowd of fortune seekers began a race that was destined to carry white civilization into the heart of the most remote land mass remaining on the globe. Some sailed out of the Columbia River and some even from California ports, but all converged in the great protected waterway which forms the inside passage connecting Puget Sound with Skagway, gateway to the mountainous trails into the Yukon. The majority made the logical decision to embark from Puget Sound ports, avoiding the need of navigating the open Pacific from more southerly terminals. Towns grew up along their course, a territorial capital was established at Juneau on the Southeastern panhandle, and aside from the grueling Richardson trail from Valdez to Fairbanks and the riverboat run from the mouth of the Yukon, there was no other way of access to the interior until the federal government completed a tortuous railway from Seward to Fairbanks 20 years later.

During these years and for many more, there was no justification for ships to sail to Alaska from California or Oregon. Population, and therefore major markets, was concentrated along the Inside Passage, and total trade to the Westward was insufficient to lure competitive shipping from more distant ports.

But when the second world war ended and the only occupation forces to hold United States territory since revolutionary days had been cleared off the Aleutian Islands, Alaska emerged as a well colonized land, ready to undertake the development of her vast resources and expressing her progressive outlook with a lusty cry for statehood.

This expanded civilian economy alone might not have justified new ports of supply, but air warfare had pointed up a strategic importance that assured the territory of military developments requiring men and materials in volume undreamed of a decade earlier. So in 1946, largely at the insistence of Alaskan businessmen it must be acknowledged, the shippers of Portland and other cities tributary to the Columbia River set about to determine the feasibility of direct steamship service to the north.

Two years of investigation, business surveys, and negotiation with government agencies followed. The nonscheduled General Airways brought a taste of competitive wholesale prices to their northern customers, and finally in the summer of 1948, Portland merchants and shippers announced their conclusions: 1. Western Alaska with its principal trade centers of Anchorage and Fairbanks provides a

(Continued on Page 50)

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CASE HISTORIES OF SOME

TANKER ACCIDENTS

How tanker accidents can be reduced through intelligent analysis of case histories.

By ***GEORGE D. WASHBURN***
Marine Safety Engineer
Standard Oil Company of California*

As a part of our organized safety program, all accidents are investigated for the purpose of finding out how similar accidents can be prevented. Since our records cover many years, I have had a ready source of material from which to select case histories.

In order to form a pattern for such a discussion, let us ask ourselves: into what classes can the hazards found on a tanker be divided?

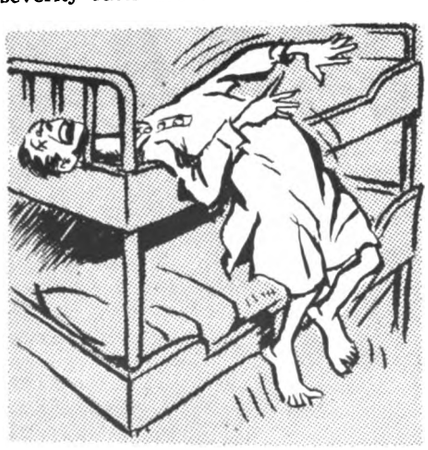
It seems to me that the hazards can be divided into, first, those connected with the cargo. In this class we can put fires and explosions and the danger of asphyxiation. Let's include in this class fires any place on the ship inasmuch as the major danger is the possibility of their spread to the cargo.

Another class of hazards are those common to any ship; falls on the deck, down ladders and from aloft, danger from boarding seas, from booms and cargo gear.

Another class would be those hazards found in industrial establishments ashore: eye hazards, burns, scalds, injuries from moving machinery, cuts from knives, broken glass and back strains.

These classifications are quite loose but they will serve to lend form to the discussion today, then they can be discarded.

Now a word about the safety record of the marine department of Standard of California. It's good. You might get the impression, after listening to a recitation of case histories of accidents that we are constantly having one catastrophe after another. Actually serious accidents are few and far between. Our frequency and severity rates are consistently low, year after year. This favorable state of affairs is the result of the keen interest shown in the problems of accident prevention work by our management and the efforts of the men on the ships, particularly the ships' officers. This last group is as fine a body of seamen as can be found any place in the world. They are experienced and conscientious and their vigilance is largely responsible for the fine safety record which we claim.



Now for some case histories of accidents. My topic says unusual cases. One unusual case that comes to mind is that of the wiper who while asleep somehow managed to get his head between two bars at the head of his bunk and then fall out of bed. Before he was completely strangled someone found him and sawed him loose. It took the skipper about three days to get the wiper breathing regularly again. The moral in this accident appears to be "don't stick your head between bars and fall out of bed." This accident is filed under the heading "bedroom hazards," a file containing some interesting stories.

Fires and Explosions

Now for some case histories from the class of fire and explosions:

In 1925 a vessel was alongside a wharf washing tanks. Starboard No. 3 had been steamed for nine hours and washed with a hand hose from the deck for one hour. It was then decided that the tank could be entered for further cleaning. Five men were standing on deck around the hatch opening. One of them lowered a large extension light into the tank. It slipped from his hands and fell to the bottom of the tank, breaking. There was an explosion. Smoke and flame shot upward for fifty feet. The five men were lucky and escaped with slight burns.

What lessons did this casualty teach? For one thing it showed that this method of gas freeing a tank was poor. Better methods have been developed. In those days ready means for testing for explosibility were not available. Now, with the development of the portable gas indicator, it is an iron clad rule that a tank must be tested by a licensed officer and passed as "Safe for Men" before a portable light is placed in the tank.

In 1943 another vessel was discharging a cargo of natural gasoline. Early in the morning the starboard main cargo pump was shut down on account of a broken steam valve rod. Because the port main suction line was leaking in No. 9 tank, it was necessary to repair the starboard pump in order to complete discharging the cargo. Accordingly, at 10:15 a.m. the vessel shut down and started circulating the lines in the pumproom in order to flush out the gasoline. About 11:00 a.m. seven men were in the pumproom, one was making a survey of the repair work and the others were washing the bilges preparatory to their being tested by a yard chemist.

At 11:13 a.m. an explosion occurred in the pumproom that shook the ship and was audible at some distance.

Two of the men were killed by the explosion and the others recovered.

Investigation showed that the source of ignition was a portable electric extension light which had been dropped in the bilges. The source of fuel was a small amount of natural gasoline in the bilges.

This casualty emphasizes the necessity for testing spaces with a gas indicator before introducing portable electric lights into the spaces; likewise, it shows the importance of keeping the bilges clear. Another lesson taught is the need for good ventilation in pumprooms. This need has been answered in modern pumprooms with power ventilation taking suction in the bilges, and gratings instead of floor plates to promote good circulation.

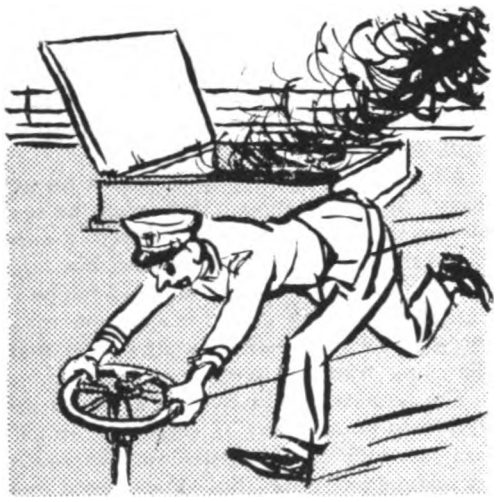
Welding Fire

In 1943 a tanker was in a shipyard having new lifeboats installed amidships, an operation that necessitated burning and electric arc welding. The vessel was "gas free" and all of her hatch covers were raised. Three of her seamen were working in No. 2 port wing tank when a fire occurred in the after end of the tank. The men climbed out of the tank through the flames and the fire was extinguished by lowering the cover. One man required hospitalization but the other two were only singed.

An investigation revealed the following details. Gasoline had been carried in these tanks on the previous voyage. In preparing the ship for the yard, the tanks were steamed, washed, and thoroughly ventilated. At this time, quantities of water were pumped through the pipe line. Subsequently, the tanks were tested and found gas free. On the afternoon of the fire, the men were bailing water out of

**Paper presented before the Marine Section of the National Safety Council at Chicago.*

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the tank in preparation for the next cargo. At this time, the valve in the tank was opened and left open to let any water in the line run out. As the vessel was trimmed by the stern, a small amount of water had collected in the after end of the tank covering the suction lip of the cargo line. Most of the water was bailed out and the men were gathering the last of the rust when the fire occurred. One man climbed out of the tank immediately and was burned about the arms in so doing. The other two men retreated to the forward end away from the fire and the hatch opening. They watched the flames for a short time. Dense smoke was pouring from the fire and soon they saw that they could not remain in the tank. Accordingly, they dashed through the flames and climbed the ladder to the deck, a distance of approximately eight feet. The chief mate, attracted by the cries of "Fire," arrived on the scene, shut off the valve leading into the tank and lowered the tank top, thus extinguishing the flames which had been burning for some two or three minutes.

It is the consensus that a small quantity of gasoline remained in the suction line despite repeated washings. Probably it was held in the line by a water seal and hence was not discovered when the tank was tested with the gas detector. When the level of the water was lowered below the suction lip by bailing, the gasoline escaped and later ignited. The fact that the gasoline ignited without audible concussion supports the theory that the gasoline had been held in place by the water seal and was released only shortly before ignition. If the gasoline had been free to vaporize the full length of time the men were in the tank it probably would have formed an explosive mixture.

The men involved were asked if they had been smoking. They said they had not. While this question may appear to experienced tanker men to be unnecessary, it should be remembered that there have been bad accidents in tanks which have been the direct result of men smoking.

After the accident it was observed that a number of sparks were falling from burners' torches onto the closed tank top of No. 2 wing tank. Presumably a spark could have fallen into the tank when it was open, although the men in the tank did not observe any such happening. It would therefore appear that sparks from burners' torches were the most likely source of ignition.

This accident was serious and could have been much more serious. If, for example, it had been a warm day, the gasoline would probably have vaporized and formed an explosive mixture which upon igniting might have killed the men instead of burning them.

A Lesson Learned

As we have said before, accidents are investigated so that we may learn something from them which will enable us to prevent similar accidents in the future.

Let us, therefore, see what we can learn from this accident. This accident shows that we can never predict with certainty the conditions inside a pipe line; hence, when a ship is "gas free" any action that might allow petroleum vapors to escape from a line into a tank must be undertaken with the greatest deliberation. If, as in this case, a valve is opened, it should be opened only under the direction of the mate. At this time he must consider all possibilities and guard against any possible danger. When valves are opened in a "gas free" ship, all tanks must be retested with a gas detector before the ship can again be considered "gas free." When sediment is removed, ballast shifted, blanks removed or lines broken, similar precautions must be taken.

This accident shows one of the unforeseen things that can happen. Gasoline floated on top of the water in the suction line and thus escaped detection at the initial inspection of the tank. The men in the tank failed to note the gasoline on the water. The gasoline was ignited by a spark and a fire resulted. (Note that the ship was supposedly safe "for men and fire" and the burners cannot be criticized for their part in the accident.)

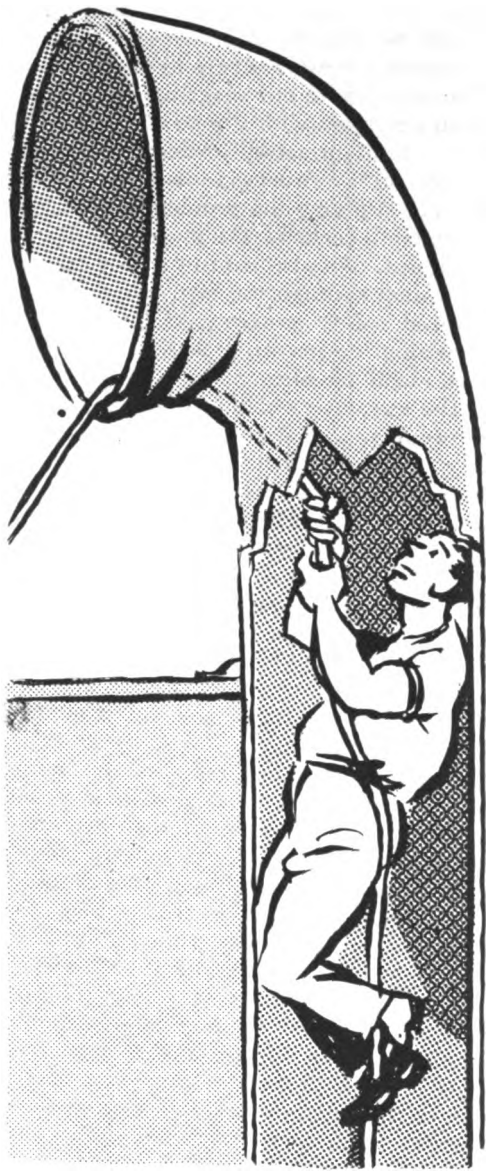
Non-Cargo Fires

Let us now consider some fires which did not involve the cargo.

In 1918, on a pre-First World War tanker, a fireman slacked off on a live burner, that is, he started to remove a burner without shutting off the fuel oil. As a result, oil fanned out between the burner and the burner base, spraying over the fire room. It ignited almost at once and all hands had to get out.

The fire room could not be entered from the engine room. They tried to shut off the fuel oil pump suctions with remote controls provided for the purpose but could not find the special socket wrench needed to turn the reach rod. This wrench was supposed to be in brackets on the bulkhead but someone had other ideas—probably kept it under his mattress. They tried to shut off the steam stops on the top of the boilers but could not reach the valves on account of the heat.

Then the first assistant went into action. He soaked himself with water, dropped a line down the fire room ventilator and slid down it. He attempted to reach the fuel pump to shut it off but the fire drove



him back. A hose was passed down the ventilator and he fought the fire from the floor plates, hoping to blast his way to the fuel pump. In the meantime they found the socket wrench and shut off the fuel pump suctions. This didn't make much difference as the fuel pump had become warped from the heat and the water had stopped running. With the supply of fuel shut off, the fire soon burned itself out.

Pulling Line Burners

A somewhat similar accident happened aboard another vessel in 1930. In this case the 12-4 fireman put in a burner and didn't get it in quite straight. When he turned on the oil a little leaked out. Instead of shutting off the oil, he slacked off the yoke and tried to straighten the burner. Oil flew out in a fan shape and caught fire and there was soon quite a blaze going. The fuel pumps were shut off with reach rods from the boat deck and the fire was extinguished with water. The fireman was seriously burned. Fortunately a battleship was nearby and undertook the care of the fireman. With skilled medical attention he recovered completely except for a few scars.

The hazard in pulling live burners has been met in several ways. Modern design no longer places the fuel pump in the

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fire room but in the engine room where it can be reached and turned off by the engineer if trouble occurs in the fire room. The majority of our seagoing vessels have been equipped with a type of burner that has a built-in safety device which shuts off the oil if a fireman pulls a live burner. We are studying the problem of installing a similar check on the ships not now so equipped. We also control this hazard by education through the medium of our organized safety program, constantly emphasizing the necessity to shut off oil before changing burners.

The spaces in which a fire is most likely to occur on a tanker are the living quarters. This has been proved time after time. The most likely cause of a fire is improper disposition of smoking materials. We have had numerous small fires resulting from the discarding of cigarettes into wastepaper baskets. This hazard is controlled through education, by requiring that quarters be kept shipshape, by not allowing containers to acquire accumulations of trash and by providing metal waste baskets.

A fire of another type in the living quarters occurred aboard another vessel in 1948. The paneling in the recreation room caught fire but was quickly extinguished with comparatively little damage. Investigation revealed that when the blackout switches were removed from the doors the shipyard workers had simply cut off the wires, taped them up and shoved them into the holes in the jamb. After a couple of years the insulation wore off and the wires shorted and set fire to the jamb. After the fire was extinguished, the paneling was removed and the wires traced back to the junction box where they were disconnected in a workmanlike manner.

This fire shows that an installation which was originally correctly installed can be made unsafe by some subsequent act.

Another type of fire against which we must be continually on guard is that produced by spontaneous combustion of paint rags. In 1948 aboard a tanker, smoke was detected coming from under the fo'c'sle head at 1:00 a.m. A man was sent to investigate and he reported a fire in the paint locker. The general alarm was sounded. The vessel was stopped then run before the wind. Bulkhead doors were closed, hose lines led out, water turned on in the main lines and steam in the smothering lines in the paint locker. Quick action extinguished the fire in a few minutes with minor damage. Happenings of this sort have led to the practice of having a man inspect the paint locker at the conclusion of each working day. Likewise, watch officers have a man make periodic rounds of the ship during the night.

Asphyxiation Cases

Discussion up to this point has revolved around fire. Let us now consider a few cases involving the anaesthetic qualities of petroleum products. In 1943 a tanker was cleaning tanks for change of product. The tanks were butterworthed and the hatch covers were opened. The next day the mate tested No. 2 tank and found it to be gassy. Later he sent two men into the tank to bail out some water, equipping these men with fresh air hose masks. After the men had been in the tank some four or five minutes, one man looked around to see his partner taking off his mask. The latter passed out and fell on the tank bottom. On seeing this, the first man became dizzy but shortly regained control of himself and attempted to replace the mask on his mate.

The alarm was given and the unconscious man was hauled on deck and given artificial respiration. A thorough investigation was made of this accident with the following conclusions: First, the responsibility for this accident lay directly on the officer in charge, as he freely admitted. Under the circumstances the men should not have been in the tank. Our tank cleaning regulations state definitely that men are not to be allowed in tanks unless the vapor content of the tank has been tested and found to be without hazard to man. Fresh air hose masks are supplied for emergencies and not for routine work. The most interesting aspects of this accident were the human factors involved—why did the man take off his mask? This man was comparatively inexperienced but a sensible, level-headed, perfectly normal person. He did not remember taking off his mask nor could he give any reason for doing so. We think we know why he did.

When the fresh air masks were first placed on the ships, many years ago, they were new to all hands. Before the fellows got used to them and gained confidence in them, incidents somewhat similar to the one we are discussing took place.

Before human beings accept anything new they have to get used to it. In the case of these masks, experience was gradually gained in their use and, as the experience grew, the mental hazards diminished.

Now let's see if we can picture the frame of mind of the new man asked to put on one of these funny looking contraptions and to climb forty feet down a ladder into a tank containing petroleum vapors.

He is surrounded by factors he does not have the experience to evaluate. First, the mask, then the tank, then the gas. He may not be aware that these things bother him, but they bother any new man whether he recognizes the fact or not.

Some little thing may bring these feelings to the fore—maybe the man can't see through the goggles—or he may stumble—or he may start to sweat.

For some reason he stops thinking and his feelings take charge. Then he's in trouble. He's got to get out of there. He rips off the mask and starts for the ladder. He may make it—he may not.

Testing Tanks

Let us repeat that this is perfectly normal and is an old story. Lots of good men have been "panicked" in their time and are none the worse for it. Ask some pumpman or engineer what can happen when a man crawls into a close compartment through a small opening and gets "panicked." He'll tell you that a man swells up and can't get out again. Well, that's another story. Let us continue with this one.

Why did the man with the mask on get dizzy? It would appear that when he saw his partner pass out he suffered a case of shock. Again a mental hazard but notwithstanding a perfectly normal happening. Shock in an accident is a serious matter, often doing more damage to a man than any hurt he may have suffered.

The lessons taught by this accident are that men should not be sent into atmospheres which contain petroleum vapors in hazardous amounts; that experienced men should be selected for unusual jobs and that all of your rescue equipment should not be used at one time. These vessels are equipped with two fresh air hose masks. One of these should be held in reserve so that if the first man gets into trouble he can be rescued.

In 1943, aboard a tanker, the chief mate and the pumpman were checking over the pumproom while at sea. Everything seemed shipshape except that the bilges needed pumping. There was no hurry about the job and nothing was done at the time. A short time later, the vessel changed course sharply and started to roll. The pumpman decided to pump the bilges and went below to start the pump. By a lucky chance the mate wanted him and started looking for him. He found him on the floor plate unconscious. The mate carried him up on deck and gave him artificial respiration and he recovered completely. This accident teaches that no one should go into a pumproom, cargo hold, forepeak, after peak or other isolated compartment without telling someone where he is going.

In 1936 aboard another vessel, a pumpman and ordinary seaman were overcome by gas and in consequence of which they were also injured from falls due to their entering a cargo tank in violation of safety rules. In this case, the pumpman without contacting a responsible officer or testing the atmosphere in the tank, entered it to make a small repair to a gauge tape. Upon being overcome by gasses which had remained in the tank although it had recently been cleaned, he fell a considerable distance to the bottom of the tank whereupon the ordinary seaman, acting on his own initiative, went to the pumpman's rescue without the use of a fresh air hose mask and was overcome and fell several feet to the tank bottom. Fortunately other assistance was near at hand by this time and the men were rescued with the use of fresh air hose masks. These accidents emphasize the absolute need for testing tanks or any compartment which might contain petroleum vapors, prior to permitting men to enter the tanks or compartments and also the need of proper supervision in this respect.

Fire Line Filled With Gasoline

Going back to the general subject of fire for a moment, we recall an incident where the ship's fire fighting system got

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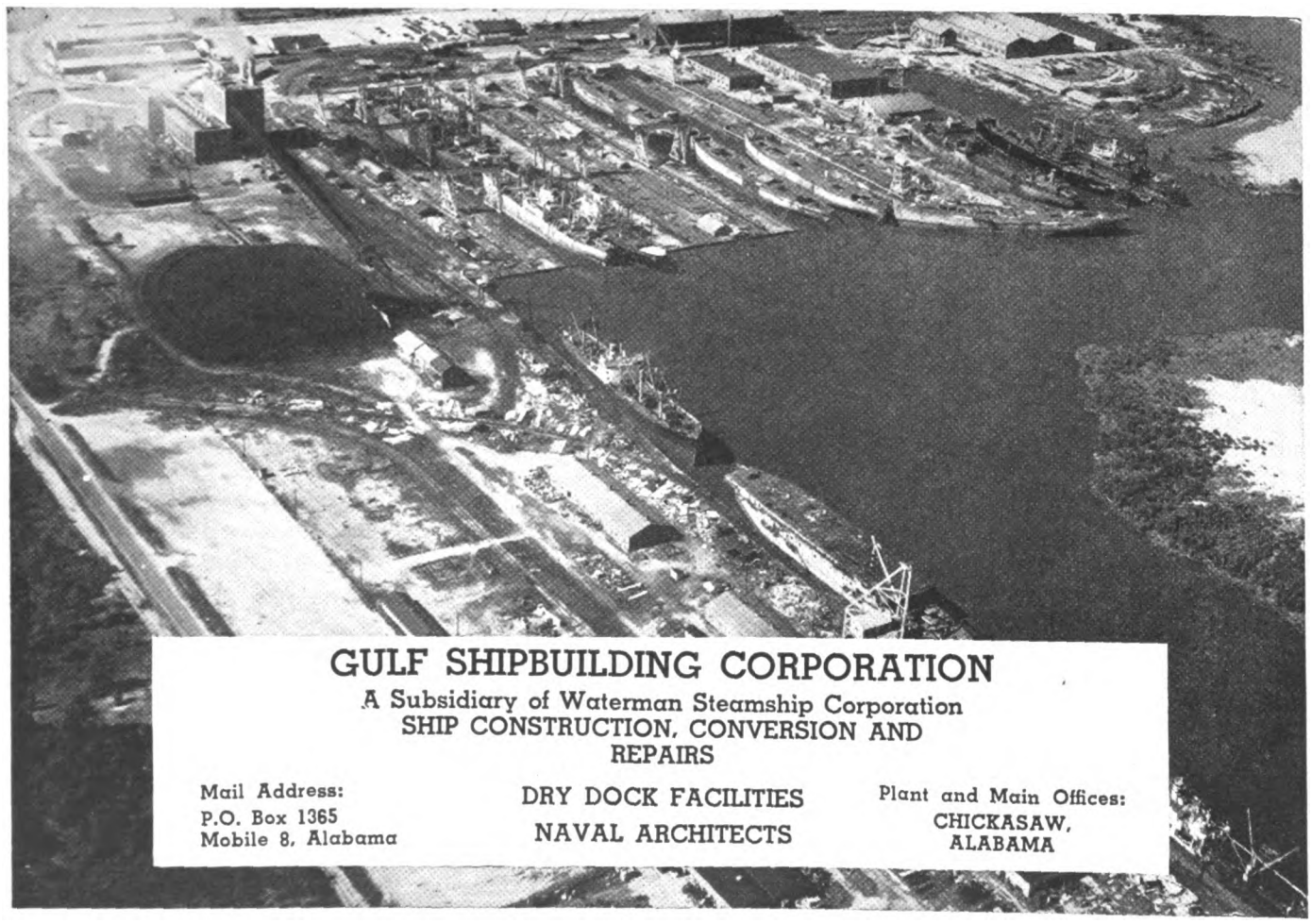
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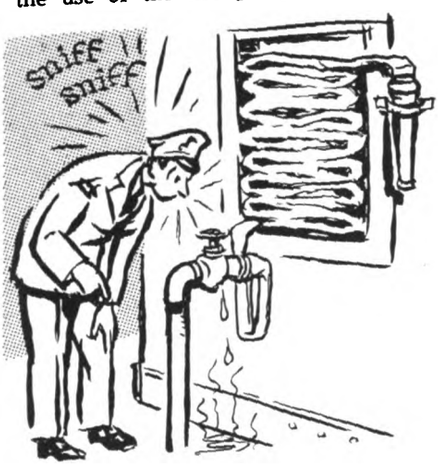
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filled with gasoline. The vessel concerned was a small motor tanker. She had discharged a part cargo of gasoline to a shore plant. Local regulations required that the shore line be flushed with water after such a delivery. In order to avoid filling the pumps and deck lines with water, the ship decided to flush the shore line with the fire pump. Accordingly, a fire hose was hooked up to the offshore riser, the valves opened and the order given, "water on the deck." The shore lines were flushed, hoses were disconnected and the vessel sailed. A couple of days later at sea a strong odor of gasoline was detected at the fire hydrant on the Master's deck. An investigation showed that the fire line was full of gasoline. It was flushed out at once. Here's what had happened.

The fire hose was hooked up between the fire line and the deck line through which cargo had been pumped ashore and the valves on these respective lines opened. Since the fire line was empty, gasoline gravitated from the wharf, through the deck line, and filled the fire line. When the fire pump was started some of the gasoline was flushed out but much of it remained in the dead ends. Later, at sea, the heat of the sun caused the gasoline to expand and it was forced through the closed fire hydrant valve out on deck where it was detected. The lesson taught by this incident is that while the use of the fire pump for purposes



other than fire fighting may be desirable, it should never be used for anything which would make it less effective for fighting fire or which would prevent its instant use for fighting fire.

The conversation so far has largely been of the hazards connected with petroleum products. Let us now consider a few accidents in the other two classes which we mentioned in our introduction, namely, hazards common to all ships and hazards common to industrial establishments. One of the most unusual accidents which I know of and which falls in the first class is that which occurred to a chief mate aboard a tanker. The vessel was heading up the San Pedro channel toward the wharf in the middle of the night. The chain had a half turn in it and the anchor could not be housed. The chief mate ran a three inch line out the bow chock above the anchor and dropped a running bowline over a fluke. The line was taken to the windlass and the anchor hove over. The next thing was to free the line from the anchor. The knot was untied. Efforts to shake the line loose failed so it was taken to the gypsyhead and hove taut. As a strain was put on the line, it slipped off the fluke as intended. The end whipped up on deck on the outside of the bulwark and wrapped itself around the mate's neck. The man on the windlass did not hear the mate's order to stop and could see nothing in the dark. He continued heaving with result that he hove the mate over the side and started to pull him through the chock. Fortunately at this point the line came free and the mate fell into the water. There was a tug tied up on that side amidships; nevertheless the mate managed to pass between the ship and the tug. Meanwhile the alarm "Man Overboard" had been given. The bosun and a couple of men rushed aft from the fo'c'sle head. Aft—right where they needed it—was a small line. They threw it overboard and it landed on the mate. He grabbed it and was hauled aboard. The only injury he suffered was a black eye.

The lesson taught by this accident is a general one as the incident illustrates the need for constant alertness on the part of all hands, and particularly, on the part of men handling lines on gypsyheads.

An unusual accident falling in the class of hazards common to industrial plants is that in which a Chief Engineer aboard the first full-fledged tanker on the Pacific was involved. The 2nd Assistant was keying up the tumbling block of the valve gear in the engine room. His hand was caught in the moving machinery and the forefinger was amputated. This accident was investigated by a committee drawn from the ship safety committee. In this case, the committee consisted of the Master, Chief Engineer and the 1st Assistant. This group went to the engine room and the Chief Engineer proceeded to illustrate how the accident had occurred. He unfortunately got his hand too close and he, too, lost a forefinger. Truly a practical demonstration.

Once again the lesson taught by this casualty is general; namely, that great caution should be exercised when reaching into moving machinery.

We have said that our record is good. This naturally brings the question, "How good?" Referring to statistics issued by the American Petroleum Institute for the year 1948, we find that our injury and frequency rates for the seagoing and inland fleets were about half the national average. This places us among the leaders.

In conclusion, let us refer again to our topic. How is responsibility for the prevention of accidents fixed?

The responsibility for the prevention of accidents is basically the responsibility of top management. They in turn delegate this responsibility to the line supervisors. On the ships, the ships' officers are told specifically in writing that upon them rests the responsibility for prevention of accidents.

World Trade Comes to Alaska

(Continued from Page 44)

sufficiently large market to justify competitive points of supply provided transportation costs are on an equal footing. 2. Private businesses, government agencies and the military within the Territory all felt that competition would stabilize the economy and contribute to sound growth. They encouraged a ship line from Portland. 3. A great proportion of goods being shipped through more northerly ports to Alaska either originated in the Portland area or passed through Portland by overland carriers enroute to the point of transshipment. 4. The steaming time from the docks at Portland to any Alaskan point west of Skagway is the same or less than that from the docks at Seattle, winds and currents being equal. From the port of Astoria the distance is significantly shorter than from Seattle.

On the basis of these conclusions, and with a strong faith that Alaska's growth in the next ten years will outstrip even that of the past ten, Coastwise Lines on September 2nd, 1948, began the scheduled service that has changed the entire transportation picture to the Territory. These ships offer the additional advantage of permitting direct loading at Long Beach and San Francisco as well as Portland, and some ships on the run began this September to call at Seattle upon shippers' request. Rates are identical to those charged from Puget Sound, but often shippers have found that more efficient handling and transfer at Columbia River docks have saved them an important sum in overall shipping cost.

It has taken eighty-one years following her purchase by the United States, for Alaska to gain a full position on the trade routes of the world, and those who are carefully watching her future, both from inside and from outside her boundaries, feel that this expansion by American free enterprise, based entirely upon expectations of sound long range business, will be an important contribution to the full development of our greatest remaining source of unexploited natural wealth.

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Sun Shipbuilding Low Bidder On Alexander Ships

(Continued from Page 27)

Other bids were:

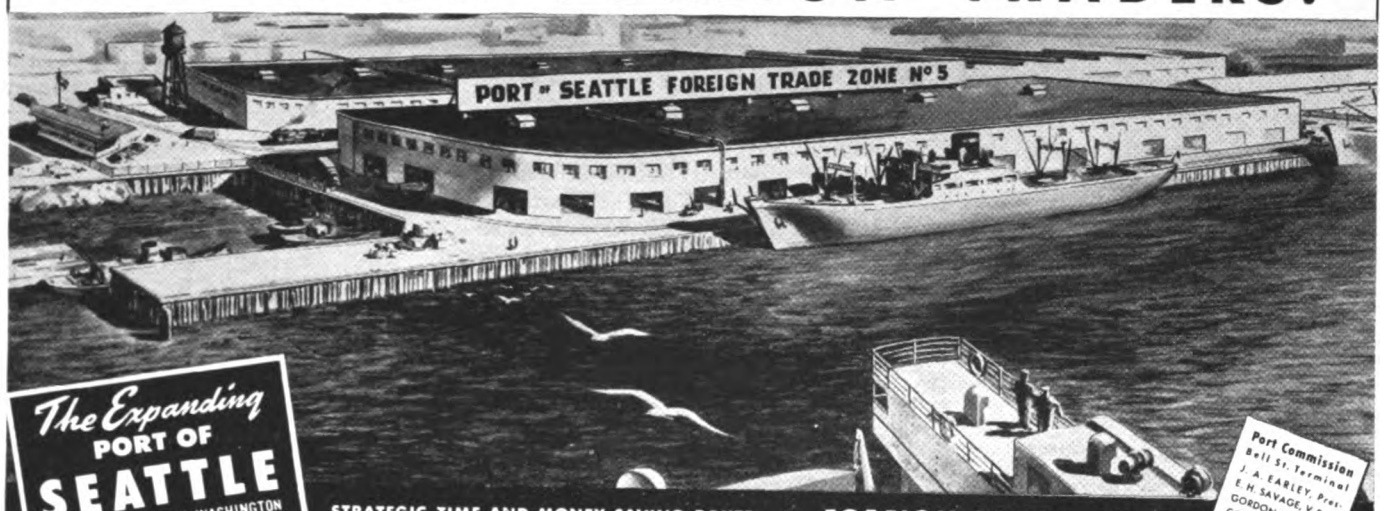
	Fixed	*Adjusted*
Newport News Shipbuilding & Drydock Co.	*$12,600,000	$12,600,000
	§$11,670,000	$11,670,000
Ingalls Shipbuilding Corporation	*$12,504,000	$12,150,000
	§$11,302,000	$10,960,000
New York Shipbuilding Corporation	*$12,450,000	$12,070,000
	§$11,339,000	$10,957,000
Bethlehem Steel Co., San Francisco division	*$17,041,000	$15,492,000
	§$15,925,000	$14,477,000
Bethlehem Steel Co. Quincy, Mass., division	*$15,460,000	$14,045,000
	§$14,438,000	$13,125,000

*(one)
§(each of 2)

The vessels will be named the H. F. ALEXANDER and the RUTH ALEXANDER. Each will have capacity for 176 30-ft. trailers or trucks and 383 passengers in the 15-hour overnight run between the two California ports.

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

Industrial Cleaning Talk Interests Seattle Engineers

Industrial cleaning materials for the marine industry was the subject under discussion at the September meeting of the Society of Port Engineers of Puget Sound. The discussion was led by Valentine Gephart, The Valentine Company, Seattle.

Following a brief resume of development of cleansing compounds to the present day synthetic detergents, Gephart divided the articles to be cleaned in the marine industry into five categories (1) cleaning of steel, iron and ferrous alloys; (2) cleaning of aluminum, magnesium and non-ferrous alloy parts; (3) washing of painted work on decks and bulkheads; (4) the internal cleaning of diesel engine water jackets; (5) the cleaning of boilers, both from the fire side and the water side of the tubes.

Breaking these down he extended his remarks to analyze specifications for compounds required for each category. The lecture of quite technical nature concluded with "In treating a marine boiler chemically, the problem of oil often presents a very serious condition by combining with the scale and building up an oil impregnated material on the tubes which has tremendous insulating value.

"To attempt to control the oil in a boiler through the use of the sodium salts of high alkalinity is hazardous, both from the standpoint of causing foaming and from the possibility of caustic embrittlement which might result in intercrystalline cracking in the rivets. Ferric sulphate has been used with advantage in controlling oil in the return condensate tanks of marine installations, and when properly used in conjunction with the above mentioned feed water treatment, and if accurately controlled will result in a very effective procedure." An extended question session followed delivery of the paper.

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Bitumastic Discussion Heard By San Francisco Engineers

Anchor Equipment Co., San Francisco marine suppliers, put on a Bitumastic program at the well-attended October meeting of The Society of Port Engineers, San Francisco, and Sam E. Nelson, Anchor sales engineer, gave an interesting and informative talk on protective coatings.

Mr. Nelson pointed out that industry pays a bill of approximately $6 billion annually to rust and corrosion and a considerable part of this huge amount is spent within the maritime industries.

"Bitumastic coatings have an unequalled reputation in the marine field," Mr. Nelson said, "because of a successful performance record over nearly 100 years.

"Bitumastic has helped in no small way in the successful development of the modern steel ship. In 1854, nearly 100 years ago, the large scale use of steel in ships was not looked on with favor. The structural advantages of steel were

THE SOCIETY OF PORT ENGINEERS . . . San Francisco. Top row, left to right, standing: WM. DEARDORFF, Deardorff Engineering and Machine Works, Oakland; TED SOWERS, Bethlehem, San Francisco; BILL SABISTAN, SAM E. NELSON, HENRIK GREGER, JOHN O'LAUGHLIN, LOU SMITH and DICK DE BERRY, Anchor Equipment Co.; BILL SIZEMORE, Army Transport Corps. Seated: J. A. SANDERS, chief engineer Marine Transport Lines' tanker MISSION LORETA and J. S. JERSTED and ALLAN SCURFIELD, Anchor Equipment Co.

Bottom row, left to right: San Francisco—G. M. KINNEY, marine salesman, Shell Oil Co.; H. R. CARTWRIGHT, New York, Port Engineer, Marine Transport Lines. Los Angeles—M. J. GIGY, who spoke before the Society on the Lake Shore Engineering "Magi-Winch." Puget Sound—VALENTINE GEPHART, "BUD" WHITTLESEY, The Valentine Company, Seattle.



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JAMES H. LeVAN, Senior Sanitary Engineer, U.S. Public Health Service, discussed the problem of ship sanitation at the first Fall meeting of the Society of Marine Port Engineers, New York, N.Y. Mr. LeVan is also an instructor in ship sanitation at Kings Point.

well known but, as today, it had the unfortunate characteristic of rusting and pitting away at an alarming rate when exposed to salt water and salt air.

"At that time two men, one a plumber and the other an architect, in England, set about to find a solution and they turned to coal tar as a steel preservative, the same coal tar which for years had demonstrated its ability as a preservative in wooden ships. These men worked for months to find a tar pitch of the right consistency and with the proper mineral filler to impart the right degree of hardness. They were successful, and Bitumastic Enamel was the result. Since that time, more than 30,000 ships have been protected with this product.

"There is no actual information about the life of this coating because, in almost every instance, it has outlived its ships. When the first ss MAURETANIA was scrapped after 30 years of service, its Bitumastic Enamel coating was found in perfect condition. The famous Smith pontoon dock in England was scrapped after 46 years, because of obsolescence, and its Bitumastic Enamel and the surface beneath were found in perfect condition.

"The Koppers Company, present manufacturers of Bitumastic, and their predecessors, Wailes-Dove-Hermiston Corporation, worked for years to develop both the hot and cold Bitumastic Enamels."

A New York guest at the San Francisco meeting was H. R. Cartwright, port engineer of Marine Transport Lines and a member of The Society of Marine Port Engineers, New York. Mr. Cartwright, in a brief talk, said the port engineer fraternity, on all seaboards, gave full credit to San Francisco for establishing the first port engineers' society. Now others are active in New York, Los Angeles, Portland and Seattle.

Lake Shore Engineering Program For LA Port Engineers

A discussion of Lake Shore Engineering Company's "Magi Winch," or cargo winch, and other cargo handling equipment, illustrated by motion pictures, was given before the October meeting of The Society of Port Engineers, Los Angeles, by Merrill J. Gigy, San Francisco, M. J. Gigy & Associates, Pacific coast representatives of Lake Shore.

J. R. Stokes of the Gigy staff handled the motion pictures, which showed the Lake Shore plant at Iron Mountain, Mich., and also the operation of Lake Shore's "Siporter" cargo-handling unit aboard the American President Lines' luxury liner PRESIDENT CLEVELAND.

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Portland Port Engineers Stage Ladies Night

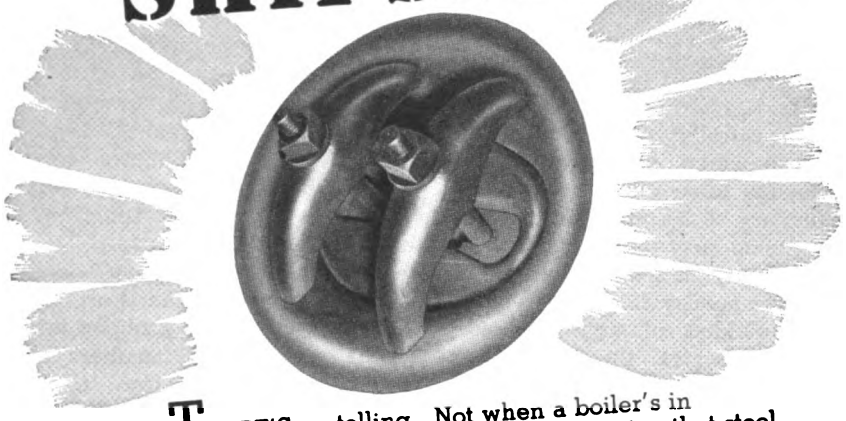
Wives of members and guests were invited to the September meeting of the Society of Port Engineers, Columbia River area. Motion pictures taken at the Society's annual picnic were shown.

Harvey G. Martell, The Texas Company, program chairman, has announced a field trip is programmed for the meeting on November 10. For that meeting arrangements have been made to visit the Marine Electric Company, Portland, plant for actual demonstrations of operations of dynamic balancer; wire insulation with spun glass; motor winding, and other modern equipment.

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The Propeller Club, Port of San Francisco, announces Friday, December 9, as the date for its annual Christmas dinner dance at the St. Francis Hotel. Guests will include members of the Northern California section of The Society of Naval Architects and Marine Engineers.

SHIPSHAPE?



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OPERATING IDEAS



FOR MARINE SUPERINTENDENTS, PORT ENGINEERS, PORT CAPTAINS, AND OTHER OPERATING EXECUTIVES

HOW TO USE FLOODABLE LENGTH CURVES

PART II

By E. V. LEWIS
Naval Architect
George G. Sharp

Last month's article discussed the meaning of floodable length curves and the effect on floodable lengths of changing some of the basic assumptions. Here it is proposed to deal with permeability and its significance in flooding.

Permeability

This is a measure of the ability of a space to absorb water. On the basis of some experiments some years ago, it has become customary to assume that spaces occupied by steam propelling machinery have a permeability of .80 (Diesel propelling machinery spaces .85). This means that 80% of the molded volume is assumed to be filled with water, the remaining 20% being occupied by machinery units, piping and ship's structure into which water cannot penetrate.

In cargo spaces, the principle is the same but its application is not quite so simple. The generally accepted figure of .63 for cargo spaces is a good average value and is therefore acceptable for establishing standards of subdivision. However, since actual cargo permeabilities often vary considerably, the curve based on .63 permeability may be misleading if applied to an actual case of damage. Accordingly, curves have been worked out for several permeabilities to illustrate the effect of variations in permeability. The accompanying figure shows the effect of a change in permeability from .63 to .85 at 22 ft. draft and from .63 to .85 and to .50 at 28'-6" draft.

In considering floodable length curves at less than full load draft, the permeability is particularly important. This results from the fact that there is either less cargo or lighter cargo in the ship at lighter drafts. Hence, in either case, the permeability must be higher than the standard average value. For example, at 22 ft. draft the permeability will probably be somewhere between the values .63 and .85 shown in the figure.

A floodable length curve for the light ballast condition without cargo, 10 ft. draft forward and 20 ft. aft, with .95 permeability, has been worked out also. It has not been shown, however, since it would confuse the drawing. It may be of interest to note that it falls close to the 22'-0" draft .63 permeability curve forward and drops below it aft. Hence, in this condition the ship meets a two-compartment standard throughout except for holds No. 4 and 5.

Estimating Permeability

Although it is impossible to determine exactly the permeability of a loaded hold, an estimate can readily be made which will be more reliable than the average figure of a .63, particularly at drafts less than full load. The first step is to estimate from the cargo diagram the percentage of the hold—up to the margin line—in which no cargo is stowed, e.g., empty spaces over the top of cargo. However, no allowance should be made at this point for broken stowage, i.e., spaces between boxes and bales, unless it is greater than normal. Empty spaces are assumed to have .95 permeability, which allows for intact structure.

The second step is to determine the average permeability of the cargo, using the cargo stowage diagram as a guide. The accompanying table will permit a reasonable estimate for each type of cargo, allowing for normal broken stowage as well as for the penetration of water into the individual packages. The overall average permeability of the hold can then be obtained by tabulation as shown in the following example:

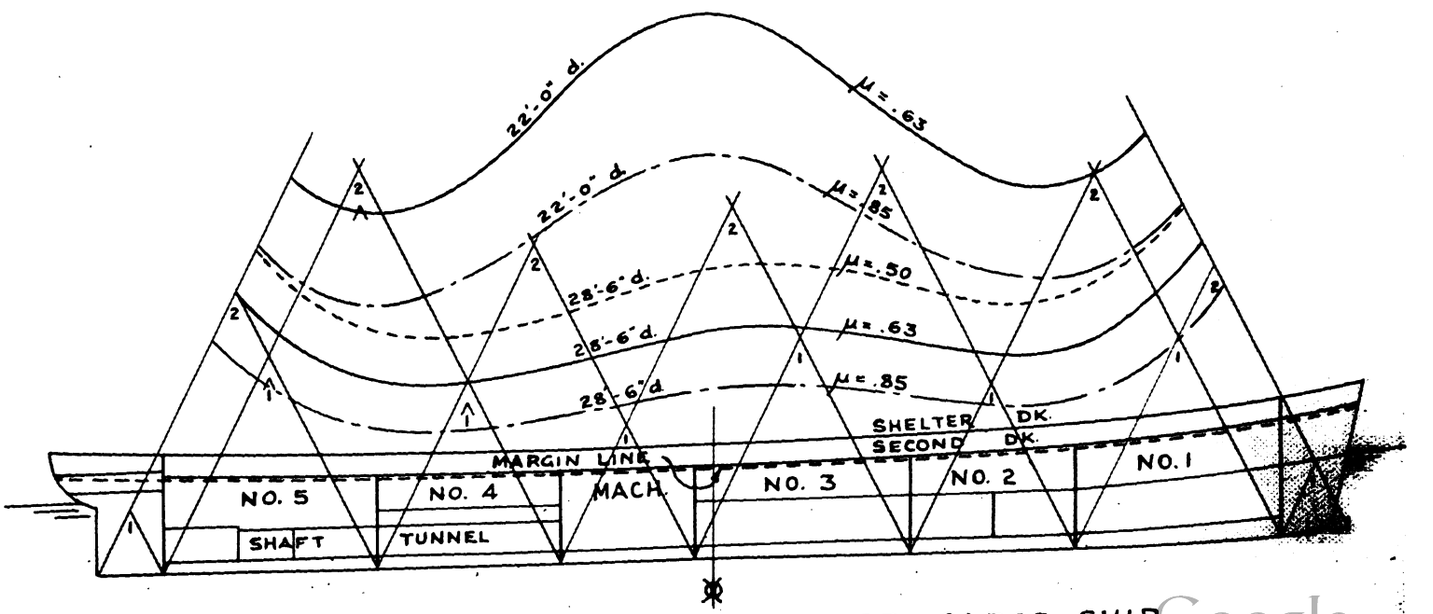
Permeability Example

Hold No. 3 has 160,000 bale cuft.
Margin Line is 3" under weather deck.

	Bale Cuft.	Perm.	Moment
Steel plates & rods	15,000	.20	3,000
Boxed machinery & parts	20,000	.80	16,000
Boxed automobiles	32,000	.80	25,600
General cargo	27,000	.60	16,200
Bags of flour	12,000	.20	2,400
Unboxed automobiles & trucks	41,000	.90	36,900
Unoccupied space	13,000	.95	12,300
Total hold capacity	160,000		112,400
Average permeability of hold		.705	

Effect of Double Bottom

The generally accepted permeability of .63 outside of machinery spaces is actually based on an average cargo per-



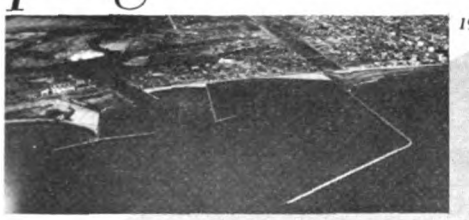
FLOODABLE LENGTH CURVES - C3 CARGO SHIP

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meability of .60. This figure is increased to .63 to allow for the flooding of empty double bottom tanks. However, this is really an over-simplification of the problem which is justified only in obtaining a rough average value.

For example, if at the time of damage the double bottom is filled with liquids, then no flooding of tanks can take place at all—except for the possible interchange between the tank liquid and sea water. A second possibility is that even though the double bottom is empty, the damage may not extend below the tank top. A third possibility is that the damage does extend below the inner bottom, with tanks empty. However, with the amount of longitudinal tank subdivision common in modern ships, the amount of double bottom flooded can be at most only 20-50%. Hence it can be seen that theoretically the standard permeability should vary somewhat with the condition of double bottoms, but actually this is of minor importance for an approximate average figure.

For the typical cargo hold, the effect of completely full or undamaged double bottom tanks is to decrease the calculated permeability of the entire compartment by about 6%. In the example given above the permeability is changed from .705 to .645, and the calculation is carried out as follows:

Approx. molded volume of hold $\frac{160,000}{.85}$	= 190,000	.705	134,000
Intact double bottom	18,000	0	0
	208,000		134,000
Average permeability of entire compartment, corrected for intact double bottom		.645	

On the other hand, if the double bottom is empty and one side is completely flooded, the calculated permeability will be .69.

Approx. molded volume of hold	190,000	.705	134,000
Double bottom, half flooded	18,000	.50	9,000
	208,000		143,000
Average permeability of entire compartment, corrected for double bottom half flooded		.69	

It is hoped that the examples given here of variations in draft and permeability will be of assistance to the understanding of flooding curves and their application to actual conditions. In the case of C 3 type ships, the curves given here and in last month's article permit quite accurate interpolation for any draft and permeability.

⚓ ⚓ ⚓

Operational Improvements In Turbine Lubricating Systems

Paper presented at Marine Engineering Panel at the Propeller Club Convention in New York

By ALBERT C. LANTERI
Chief Engineer The Texas Company
Marine Sales Division*

Numerous recommendations have been made on good practices for cleaning of turbine lubricating oil systems before the units are put into operation or after units have been in operation for a long period of time.

No mention has been made, however, of changes which can be made in marine lubricating systems to make the cleaning operation easier or changes which can be made to keep systems clean and extend oil service life. This should be done to overcome structural defects which were in the original installation or which occurred during major conversion operations from wartime service.

Commercial Vessels

Certain design features not only hinder the cleaning of a turbine lubricating system and detract from the desirable qualities of the circulating oil as a lubricant and cooling medium but also shorten the service life of the oil. The undesirable effects on the entire unit when proper maintenance and cleaning can not be carried out because of installation shortcomings are obvious.

Difficulties that have come to light on many marine installations were not, in general, due to shortcomings of any of the agencies responsible for manufacture or operating of the turbine units but rather to incomplete coordination of all phases of the operation, particularly under extreme wartime conditions. Better coordination of design and erection problems should be beneficial to all concerned, since it would assure the final operator of the vessel of significant improvements in his complete operating unit, which would assure savings during the entire life of the vessel.

It is our feeling that close attention to the following details will greatly improve the lubricating oil system of a main unit:

A—The Engine Builder

Now that the major portion of turbine gears and gear casings are fabricated from steel plating, rusting is more of a problem than it was when gears and casings were made by casting.

1—It would be highly desirable to increase the number of inspection plates in the gear casing and these should be of the bolted type. This would increase the ease of inspection and, if necessary, of cleaning of the gears and casing interior and would greatly improve access to the interior of the gears themselves.

2—At present it is fairly common practice to weld long sections of lubricating piping and drain lines. Manual cleaning and visual inspection are not possible because of welded angles, beads and joints. Installation of piping in convenient lengths with flanges or other means of separation would greatly facilitate cleaning and inspection.

3—Particular attention should be given to design of casings to permit of adequate ventilation and care should be taken to eliminate pockets where condensation may collect and cause rusting.

B—The Design Agent (Naval Architect or Shipyard)

1—Tanks. The design agent should

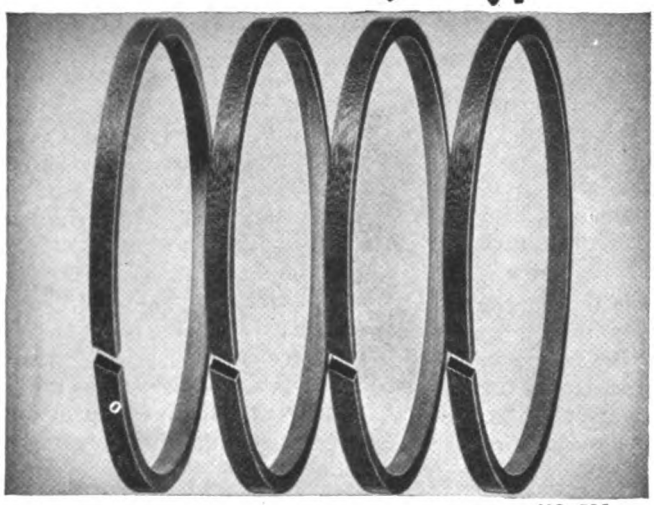
TABLE OF PERMEABILITIES

Based mainly on "Subdivision, Stability and Construction of Merchant Ships," by Cochrane and Niedemair

Containers	Permeabilities 15-30	30-50	50-70	70-90	Over 90
Boxes, Cartons, Crates	Small, compact and closely packed, as: Dry Fruit, Butter, cheese, Soap, Tile	Larger, more loosely packed as: Electric motors, Fresh fruit, Canned goods	Large, loosely packed, as: Dry goods, Fish, poultry, Hardware, Machinery and Parts (compact), Plumbing fixtures, Tobacco	Large, partly filled, as: Autos (knocked-down) and large parts, Furniture, Machinery, Tea	
Bags	Flour	Beans, Coffee, Corn, Oats, Lime, Potatoes, Sugar	Cement, Nitrate, Nuts, Rice		
Bales, Bundles	Cork, Rubber	Hides, Leather, Silk, Wool	Hay, Paper, Rope	Barbed wire, Blankets, Cardboard, Rags, Tires	
Other containers		Barrels of Fish, flour, Drums (oil & other liquids)	Barrels of apples, potatoes, sugar, Reels of cable	Barrels of cement	
Bulk	Metal sheets, rods, bars, slabs, pigs	Wheat, Steel rails and and shapes	Refrigerated Meat	Pipe and conduits	Automobiles

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Floating Type



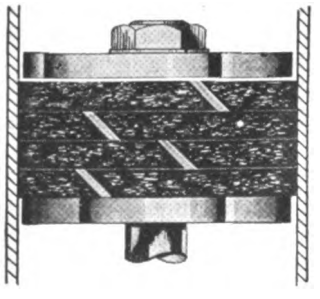
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make certain that all tanks (gravity, storage, settling, dirty oil and sump tanks) are of sufficient size, and with dished or convex bottoms so that water or sediment may be removed at intervals during service without the necessity for complete drainage and manual cleaning.

2—Manholes should be located conveniently at the tops of the tanks for easy examination and entry. Those who have had to make inspections of marine lubricating systems will appreciate the importance of this suggestion.

Sump Tanks

Manholes should be situated to permit of easy access and complete inspection.

The bottom of the sump tank should slant toward the center and the center gutter should slant toward the aft end of the tank. The centrifuge suction should be located at the lowest point at the aft end to permit removal of sediment and condensate which may settle out.

The oil inlet and outlet lines should be at opposite ends of the tank, to permit the oil to rest as long as possible and separate entrained air and suspended material. The pump suction should be installed with bell-mouth fitting at least 6"-8" above the sump tank bottom to make certain that the pump suction will not draw in and recirculate material which has separated from the oil and settled to the bottom of the tank.

In certain cases, failure to observe the above precautions has resulted in continued circulation of water and foreign matter and air has not been permitted to escape from the oil. Where inlet and outlets are close together only a portion of the oil is being continually recirculated, giving actual oil volumes in service much less than desired by the turbine builder.

On some types of vessels the bottom of the gear casing is the top of the sump tank. In such designs, the sump tank should be fabricated so that the drain holes from the gear casing are close to the forward end of the sump tank for proper circulation and settling of the oil before it passes out of the sump at the sump suction located at the aft end.

Ventilation

Ventilation of gear casings and of all lubricating oil tanks is a point which has had very little attention considering its importance. Venting of tanks is a problem which must be given individual attention on each installation. Vent piping should be of adequate size and so laid out that any condensation or vapor going through the vent lines or any deposits forming in these lines will not drop back into the tanks or gear casing. In many cases vent lines are joined to a single header and are of such length that return of condensate to the tanks occurs. Vent lines should be independent and not joined to a manifold or header. Vents should be fitted with strainers of the removable type for periodic cleaning. Mechanical air circulators and de-humidifiers have been found very effective in preventing formation of condensate in certain gear installations.

Coolers

Coolers, especially the two-pass baffle type, should be installed in an upright position so that they can be cleaned easily at short intervals. With coolers installed in an upright position, sediment will not lodge beween the baffles, as can happen with coolers installed in a horizontal position.

Piping

All piping for the lubricating system should be laid out in such a manner that sediment will not accumulate in pockets or low points of suction pressure lines. The piping design should permit of easy dis-assembly for cleaning and inspection. Drain plugs or blank flanges should be installed at the lowest points in the circulating oil lines to permit complete drainage. In certain cases, final charges of lubricating oil have contained appreciable quantities of flushing oil because no provision was made for complete removal of the flushing medium.

The piping should be installed near and at the turbine and gear casing so that it will not interfere with the routine inspection of oil nozzles and nozzle strainers.

Heating Coils

At certain times it may be necessary to heat up the lubricating oil in a turbine system especially when starting up a cold plant. Some units are not fitted with heaters. Heaters should be installed either in gravity tanks, sump, or in coolers, whichever is most suitable for the installation. When the heating medium is steam, its pressure should be reduced to a maximum of 5 lbs. gage, to prevent local overheating of the oil.

Strainers

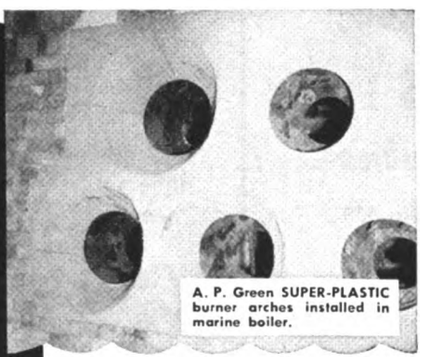
Lubricating oil strainers should be located before and after the pumps to permit the removal of any foreign matter from the system which might otherwise lodge in the coolers and gravity tanks.

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(Continued on Page 64)

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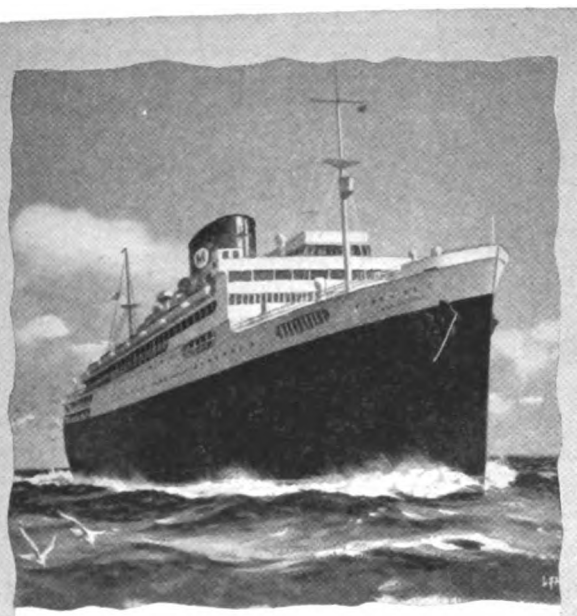
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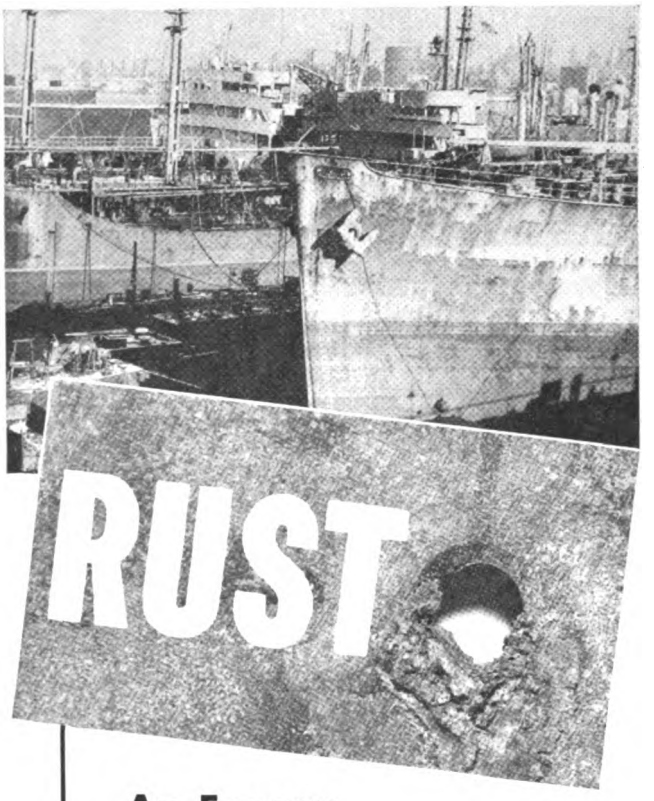
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Alex D. Stewart, Editor

Northwest Harbor Group Meets In Annual Session

Construction Projects Reviewed

Port officials of Oregon and Washington met at Vancouver, Washington on September 29 and 30 and October 1 for the 24th annual convention of the Northwest Rivers and Harbors Congress.

Guest speakers consisted of officers of Corps of Engineers, Department of the Army, inclusive of Colonel O. E. Walsh, Division Engineer; Colonel E. C. Itschner, district engineer at Seattle; and Lt. Colonel D. A. Elliget, acting district engineer at Portland. They reviewed rivers and harbors improvements in progress and proposed.

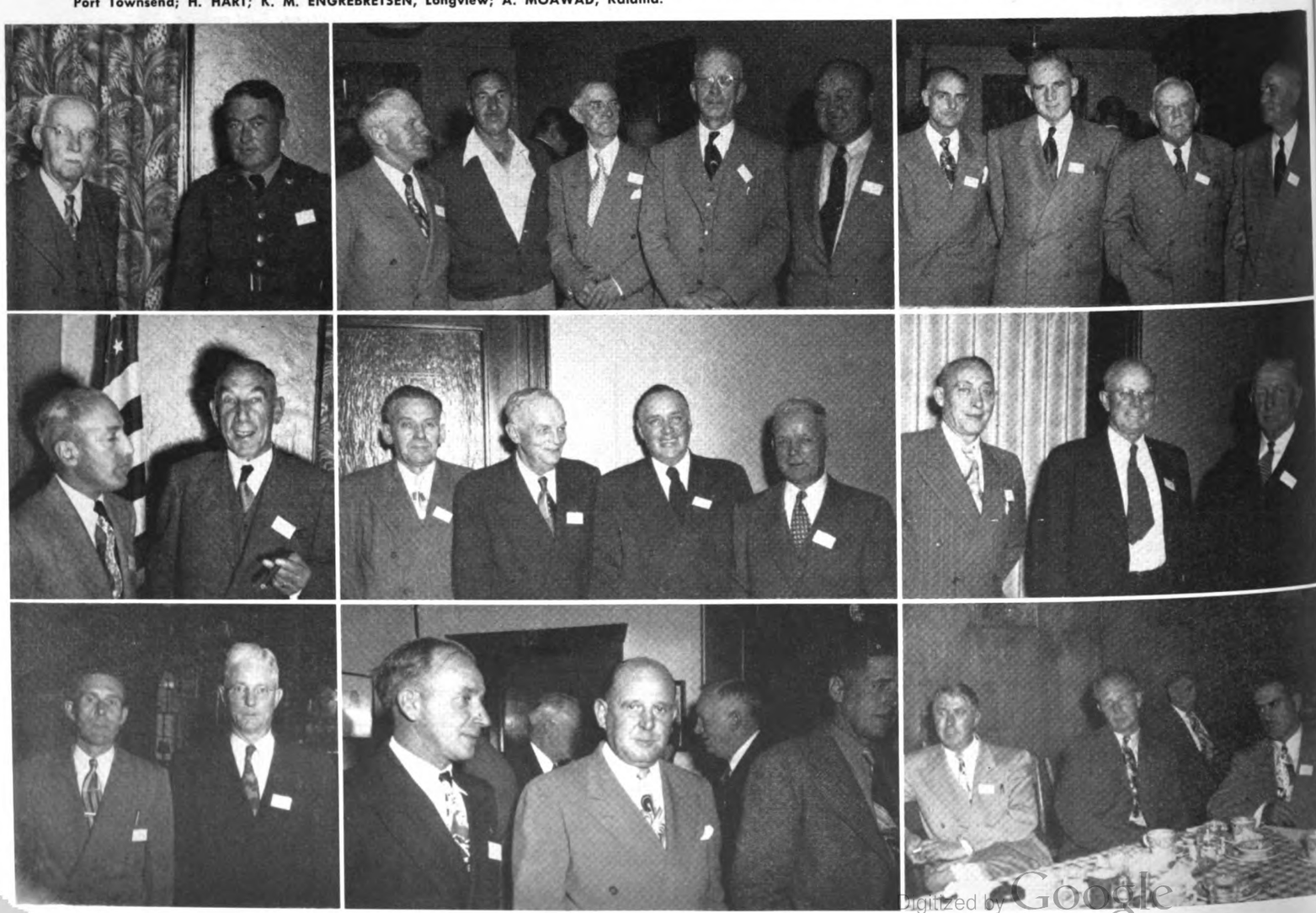
Port reports included statements from each port represented. Port manager Henry W. Davies of Port Angeles indicated the fishing haven about completed at that port at a cost of $210,000 is operating successfully and the port plans additions at estimated cost of $500,000. Captain Clyde L. Raabe, a member of the Portland Commission, and a member of the Columbia River Pilots Association, stressed the need for a channel 35 feet deep and 500 feet wide in the Vancouver area.

The Shilshole Bay breakwater and the Green River Dam were discussed by John A. Earley, port commissioner, and George T. Treadwell, chief engineer, Port of Seattle. The Green River Dam has been passed upon favorably by the Corps of Engineers as a flood control project. An appropriation from Congress is needed to get the work started. An expenditure of $2,000,000 from the state, and $500,000 from the county, is involved in the project.

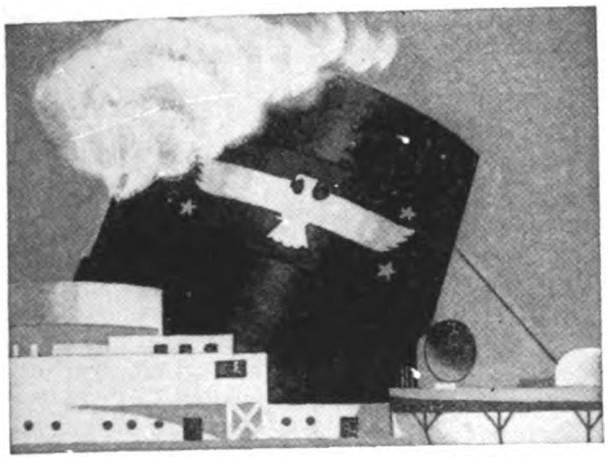
AMONG THOSE PRESENT—24TH ANNUAL MEETING—NORTHWEST RIVERS AND HARBORS CONGRESS. Top row, left to right: J. H. WHEELER, Vancouver, 1949 president; LT. COLONEL D. A. ELLIGET, Portland, Corps of Engineers; W. H. RAPPHUN, E. J. SECOR, Everett; N. R. WHITCOMB, Willapa Harbor; J. P. DOYLE, Portland. J. M. DYER, Astoria; G. T. TREADWELL, Seattle; OLIN HARRISON, Portland; F. H. MARVIN, Tacoma; J. A. EARLEY, Seattle.

Center row, left to right: COLONEL E. C. ITSCHNER, Seattle, Corps of Engineers; L. D. WILLIAMS, JR., Willapa Harbor; ABE ABRAMS; J. W. LUNDIN, Newport, Oregon; E. S. JOHNSTON, Pasco; H. W. DAVIES, Port Angeles; J. P. BRECKEL, Vancouver, R. E. HICKSON, Portland, Corps of Engineers; CAPTAIN C. L. RAABE, Portland.

Bottom row, left to right: A. R. WECHNER; C. C. CADY, Vancouver; R. H. OWENS, Port Townsend; F. H. PENDER, Vancouver, 1949 Secretary; A. C. RAMSDELL, Port Townsend; H. HART; K. M. ENGREBRETSEN, Longview; A. MOAWAD, Kalama.



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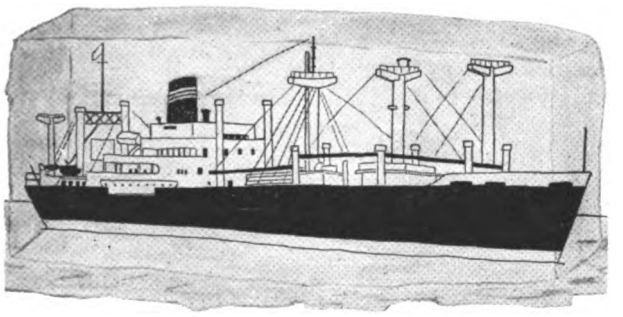
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Driving of a one-half mile long steel breakwater along Astoria's central waterfront at a cost of $500,000 for use as mooring basin for the fishing fleet was reported by Joseph M. Dyer, Port of Astoria commissioner, and president of Astoria Marine Construction Company. Building and placing of floats and other mooring facilities are to follow. Work is expected to be completed late in 1950.

Some matters discussed by port executives were acted upon by resolution. Recommendations for study and survey by the corps of engineers included feasibility of enlarged boat haven at Port Townsend; Snohomish River channel improvement at Everett; continued maintenance of channel depth of 26 feet at Willapa Harbor; modification of approved plan at Newport harbor, Oregon, by providing depth of 26 feet in turning basin in Yaquina Bay.

Another resolution recommended continuation of the civil works functions of the corps of engineers as a division of the department of the Army.

Port Angeles was selected as the convention city in 1950. F. C. Strange, Port Angeles, was elected president. Other officers elected were J. W. Lundin, Newport, first vice-president; J. M. Dyer, Astoria, second vice-president; H. W. Davies, Port Angeles, secretary-treasurer. Directors elected are: J. A. Earley, Seattle; W. L. Williams, Portland; L. L. Goodrich, Longview; L. D. Williams, Jr., Willapa Harbor; E. J. Secor, Everett.

⚓ ⚓ ⚓

LA Harbor Plans $6,000,000 Terminal for Matson

The Los Angeles Board of Harbor Commissioners and Matson Navigation Co. announce plans for a new $6,000,000 passenger marine terminal at Wilmington, on Los Angeles harbor, which is expected to be one of the most modern and efficient terminals of its kind in the world.

The facility will occupy 46 acres, will be located at Berths 195-199, Wilmington, will be served by the new harbor freeway highway and will be preferentially assigned to Matson for use of its Honolulu de luxe passenger liner LURLINE and its freighters.

The outstanding feature of the terminal will be a modern transit shed, 200 feet wide of 1,200 feet long, with special electrically operated overhead ramps, corridors for steamship passengers, waiting rooms and modern office facilities. Behind the shed will be parking area for more than 3,000 automobiles.

⚓ ⚓ ⚓

Port of Seattle Personnel Changes Announced

Retirement of J. C. Herbsman as industrial agent; Mrs. Elizabeth M. Sweet as secretary to the general manager, and Hal L. Reid as assistant to the general manager, Port of Seattle, has been announced. Mrs. Sweet has worked for the port continuously since 1917. Reid has a long record in shipping on the Pacific Coast and in the Orient, and is one of the best known and best liked men on the Seattle waterfront.

Reid has been succeeded as assistant to the general manager by C. J. Stettin. Stettin, for many years with Matson Line, and Alexander & Baldwin, Ltd., Matson agents in the Northwest, started his marine career in 1928 with the McCormick Steamship Company. He served as Lt. Colonel in the Transportation Corps, ATS, during the war.

Robert O. Edwards has received the appointment as manager of Seattle's Foreign-Trade Zone No. 5. A graduate of the University of Washington, Edwards was employed at port owned terminals until the war when he enlisted in the Navy with the commission of lieutenant. He resigned from Navy service in a civilian capacity to assume the new position with the port.

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West Coast Ports Report Increase in Work Hours

The Pacific Maritime Association reports the total work hours for coast longshoremen, one rough measure of maritime commerce, showed an 8.6% increase in August over July.

All ports except Los Angeles-Long Beach, enjoyed the upturn, with Seattle leading the increase by 26%. Portland was next with a 14% increase. San Francisco followed with 6.7% more hours in August over July. The Southern California port practically held its own with a drop of but 1%.

September figures were not completed, according to PMA, but figures for the early weeks in that month were "encouraging."

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Arthur Pegg Appointed to LA Harbor Commission

Arthur O. Pegg, president of Marine Solvents Service Corporation, Wilmington, has been named by Mayor Fletcher Bowron to the Los Angeles Harbor Commission to succeed the late C. S. Sampson. Mr. Pegg is a veteran in Southern California maritime circles, having once been head of the marine department of Union Oil Co. and, during the war, was assistant general manager of the California Shipbuilding Co.



ARTHUR O. PEGG, appointed to the Los Angeles Harbor Commission to succeed the late C. S. Sampson.

Mayor Bowron also reappointed Ralph D. Sweeney to the Los Angeles harbor board. Mr. Sweeney, an attorney, has been a member since last February and his new term runs until July 1, 1952. Mr. Pegg's term ends July 1, 1950. Mr. Sweeney, a graduate of the United States Naval Academy and the University of Southern California, is a member of the Board of Governors of the California Maritime Academy.

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"Billion Dollar Port" Says Port of Houston

The Port of Houston seemed assured today of becoming a "billion dollar port" for the second consecutive year, according to cargo valuation figures released by Port Director W. F. Heavey.

Figures for the first eight months of 1949 show that cargo valued at $770,394,500 has moved across the docks of Port Houston, an increase of more than $13,000,000 over the similar 1948 period when the port of Houston passed the billion dollar cargo mark for the first time in history.

Cargo valued at $1,115,612,215 was handled during 1948 at the Port of Houston, which now ranks as the largest port on the Gulf and one of the major ports of the world.

SECRETARY OF COMMERCE CHARLES SAWYER journied to the Pacific Coast and participated in the dedication of Foreign Trade Zone No. 4 at Los Angeles Sept. 14 and Foreign Trade Zone No. 5 at Seattle Sept. 22. In the accompanying pictures, left to right, the secretary is being introduced by GOVERNOR ARTHUR B. LANGLIE of Washington at the Seattle ceremonies and, wearing welder's goggles, is working with MAYOR FLETCHER BOWRON, Los Angeles, completing the weld on the fence surrounding the Southern California Foreign Trade Zone at San Pedro, on Los Angeles harbor.





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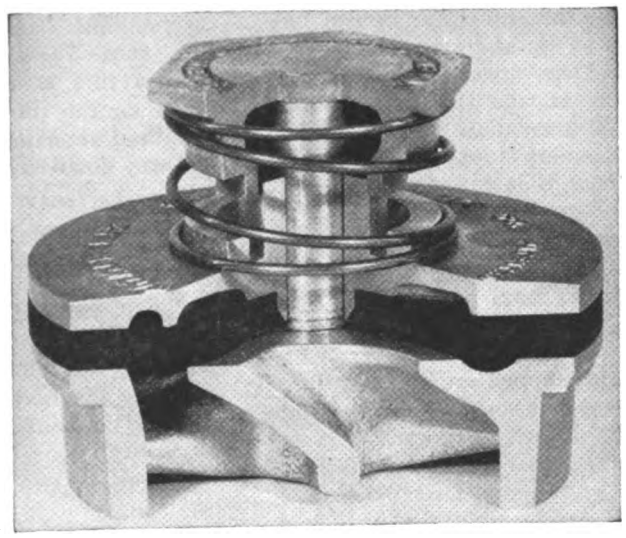
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Safety Aboard American Passenger Liners

(Continued from Page 33)

ray machinery. In spite of the fact that the bathroom door was equipped with a friction device to prevent sudden opening or closing and that the device functioned properly, and that no previous complaints had been received concerning this door and that the log showed that there was only a slight swell, this woman's claim was settled for a given sum of money.

Here again I do not know what precautions we can take to prevent a similar occurrence of this so-called accident or where we can place the responsibility or that any similar accident will happen in your lifetime or mine. With your kind permission I would like to add a little leaven to the bitter and give you at least a smile. This woman also claimed that her husband, who was in the stateroom with her at the time and who viewed the accident, was so upset by the whole incident that he was unable to eat during the rest of the voyage and, as a matter of fact, died sixteen days later. I might say that we are very happy that it wasn't *he* who claimed that the door knocked *him* down.

Buttered Decks

If you will bear with me there are only two more specific cases that I would like to mention.

One concerns a headwaiter who claimed that he slipped on a butter chip on the deck of the dining salon and fractured his ankle. Two other crew members were witnesses and said that they saw the piece of butter on the deck but were not certain that the man had slipped on it. It is true that just previous to the accident the deck had been cleaned with a damp mop. In reviewing the circumstances of this accident, it was obvious that the victim would claim that the waiter who dropped the piece of butter should have picked it up and, because he did not, the responsibility rested with his employer, the ship owner. The headwaiter, to further support his claim, because the deck had been mopped and may have been damp, would take the position that he had given instructions to mop the deck because it was his responsibility to see that it was clean. In the light of all these circumstances it must be obvious that the company was not to blame and yet this claim had to be settled for a sum of money. For the first time, I might concede that this was in reality an unusual accident —unusual in that we know of no way of preventing a dining room steward from dropping a chip of butter and we cannot conceive of any precaution or anything that we might do that would get him to pick it up. Further, we know of no precaution that would guarantee the veracity of the victim when he said he slipped on a piece of butter, versus his having taken a tumble because of a deck he had ordered to be mopped.

Bathroom Bonanza

The "cause" of the last case I will mention will be obvious to all of you and yet we must be mindful of the fact that at the time of the so-called accident no one but the victim was thoroughly familiar with all of the circumstances. Such being the case, and until a thorough investigation had been completed, this so-called accident might have been the real thing or it might have been what your conclusion will be when you hear the facts.

A man passenger alleged that while he was taking a shower, a sudden roll of the ship threw him off balance and caused him to fall, that he struck his head on the tile floor and that his left side and shoulder hit the wash basin on his way down as he fell out of the shower.

The log showed that at the time of the alleged accident, the sky was overcast and there was a rough sea and a heavy swell. When this passenger reported the accident, he was immediately placed in the ship's hospital and remained there until the following day when without any word to the doctor or nurse, he left the hospital without permission and returned to his cabin.

Sometime after the ship had docked, the company was presented with a claim for a considerable sum of money and might I tell you in confidence that the case is still pending.

The thoroughness of investigation later disclosed the fact that this passenger, shortly before embarking on this voyage, invested in three accident and health policies totaling $70,000 and providing benefits amounting to over $500 weekly.

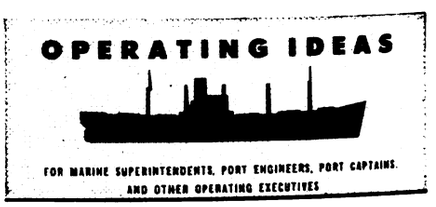
Now gentlemen, while I am most sympathetic to anyone suffering injury of any kind no matter how small, it is my opinion that this type of victim should and will receive his reward, such as it will be, when he faces the Great Master at the end of his final voyage.

In closing, I would like to say that if I have not answered the specific questions, (1) "how to avoid the repetition of given accidents," (2) "how to fix responsibility," and (3) "what recommended safety precautions I would make," it is not entirely my fault because these can best be answered by others more experienced and expert in this field.

My purpose in agreeing to meet with you today was to benefit and improve myself by listening to the other talks and in return remind you of the fact that in every field of endeavour and in every part of the world there will be accidents until the end of time and while we may be successful in lessening the number of one kind of accident, the very safety precautions we set up do help in a measure to be the cause of other new types of accidents due to increased individual carelessness.

While I am heartily in favor of men and women devoting their lives to the creation of safety measures, I am still a confirmed believer that not until every man, woman and child can be made to realize that he himself is more responsible for his own well being than anyone else —not until then will we have a lessening of accidents. In other words, it is my opinion that we should devote ourselves to the awakening of individual responsibility against *all* potential accidents rather than wait until some one is hurt and then and only then get busy "to avoid repetition"—"to fix responsibility" and create "safety precautions." And I might add that this same philosophy applies to automobile accidents, factory accidents and accidents in the home which seem to be the highest of all. My theory is: "what can we do to have the individual protect himself" rather than "what can we do to protect him in spite of himself."

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(Continued from Page 58)

day vessels are doing an excellent job of giving the operator faster and better ships which will operate at low costs.

This paper was prepared after a number of conversations with engine builders, naval architects, and shipyard representatives. It was agreed that certain zones of divided responsibility existed where even greater cooperation would pay large dividends in still further reducing operating costs, maintaining cleaner lubricating oil systems, and extending oil service life.

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Signed—Wm. B. Freeman.

Sworn to and subscribed before me this third day of October, 1949.
(Seal) Gladys H. Buresh, Notary Public in and for the City and County of Los Angeles, State of California. (My Commission expires December 13, 1952.)

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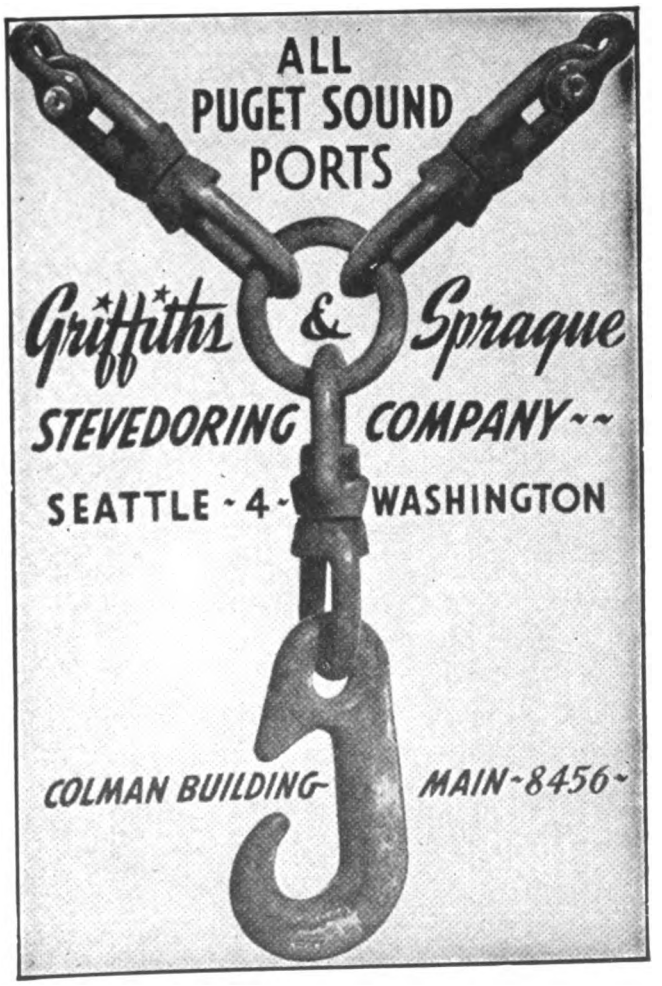


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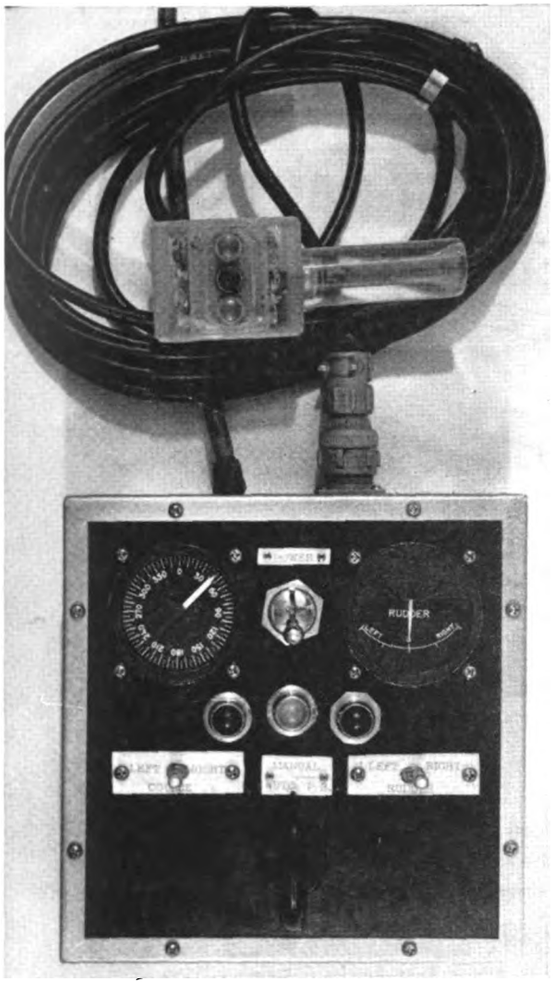
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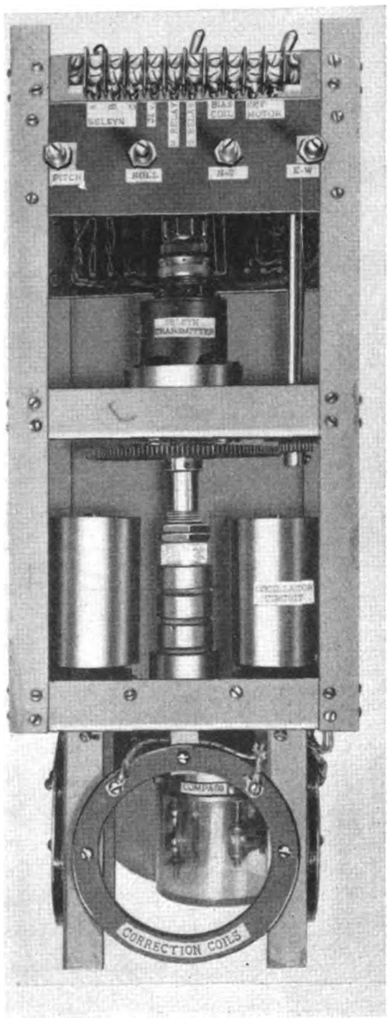
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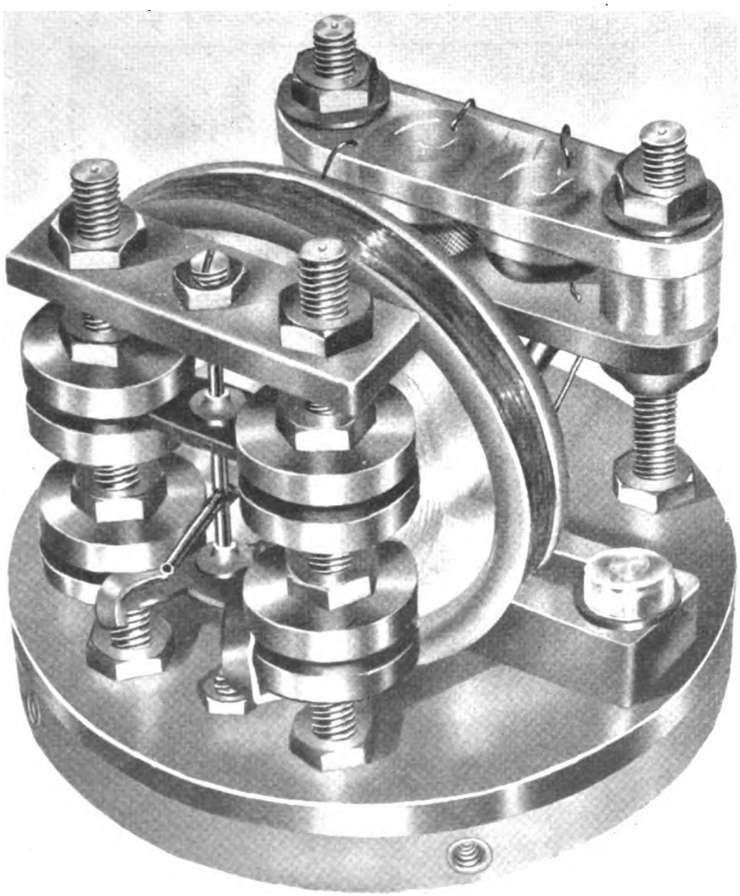


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NEW BOGUE "ROBOT HELMSMAN"







A new automatic steering device, the "Robot Helmsman," has been developed by the Bogue Electric Manufacturing Company of Paterson, New Jersey, and soon will be available on the market.

A simplified but efficient steering unit, the prototype has been in actual use aboard the motor vessel BALMY DAYS for the past eleven years. The heart of the "Robot Helmsman" is a gyro stabilized magnetic compass (see cut). Adjustment and compensation are accomplished by simple screw driver methods.

The new Bogue device incorporates many safety features, principal of which is the ability to "take the wheel" from the Robot in case of emergency without throwing any switches. If the motive power should fail the unit automatically makes itself ready for manual steering. When the wheel is taken away from the Robot during an emergency without regard to the "automatic" position of the unit, the automatic "set" course will immediately become operative again when the wheel is released.

A "weather helm" compensator can be provided to insure a set course regardless of wind or sea conditions, thus the amount of rudder necessary to hold a course has no effect on the setting desired. Nearly perfect steering is accomplished in any weather, since the rudder movement is proportional to the deviation from the course. A "time lag" correction compensates for the operating time of the relays.

In vessels having steam or electric steering gears, the "Robot Helmsman" actuates the regular ship's gear. In small craft using manual steering, hydraulic or motor power is furnished to the rudder. In no instance is ability to use the ship's conventional gear interfered with.

A remote control unit is furnished with a cord of any desired length. The unit carries the "course set" and has push-button control switches. By pushing the proper button any amount of course change can be made quickly to avoid an obstruction without disturbing the setting of the automatic course.

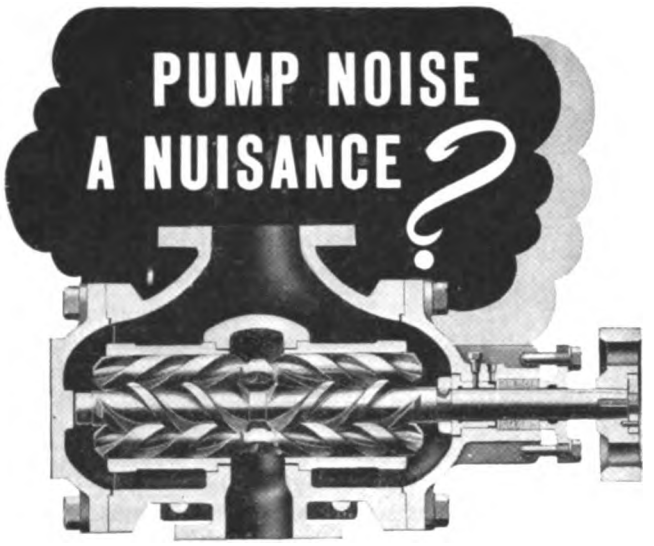
The Bogue "Robot Helmsman" has a low first cost and experience has shown that maintenance is negligible. The sealed compass unit, relays and electronic components are arranged for quick, easy replacement. Installation rarely requires more than fourteen man-hours. The entire unit installed is designed to sell for less than $1500.

Upper right—The complete unit is small and compact. The compass (bottom of unit) is corrected by electromagnetic control. The electronic transmitter actuates the regular ship's steering engine. Cost of the entire unit including installation will be under $1500.

Upper left—Bridge control unit incorporates a rudder position indicator for instant checking and as an aid to push-button steering. To start the "Robot Helmsman" in operation the desired heading is obtained manually or by the push-button control, the selector switch is set to "automatic" and the course will be held until a change is desired. Remote control switch on a cord of any length permits pilot to control steering from the wing of the bridge.

Bottom—The "brain" of the "Robot Helmsman" is this compass unit with the housing removed. It operates the rudder by electronic means, eliminating the use of contacts of photo-electric cells. Unit is slightly larger than a man's fist.

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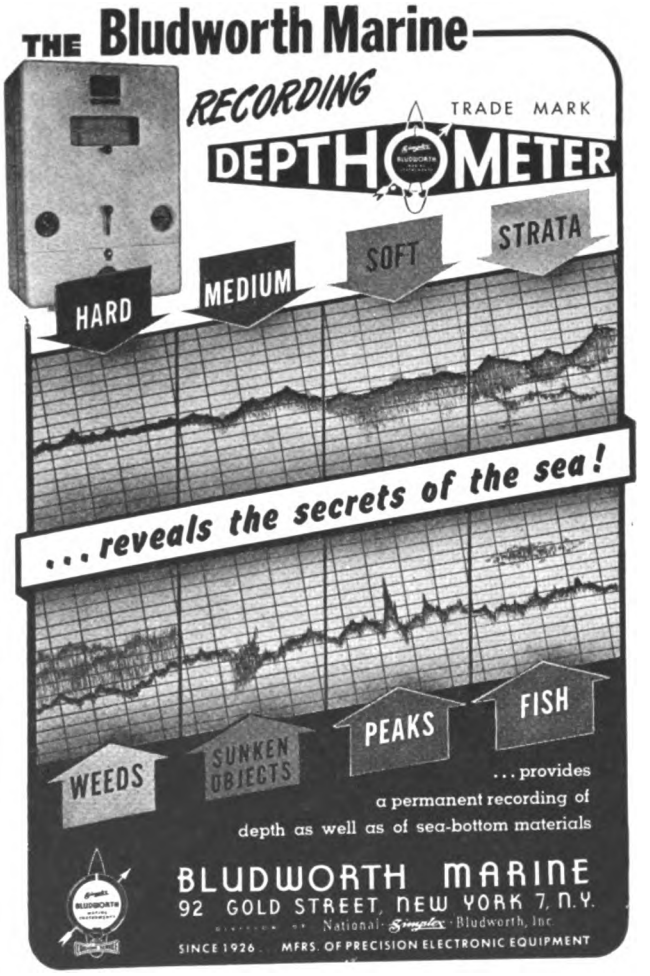
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B & W Boilers on Super-Tankers Built by Newport News

The ESSO STOCKHOLM, a 26,800 tons deadweight capacity super-tanker of the "Esso" fleet is equipped with Babcock & Wilcox marine boilers, according to officials of the boiler company. The ESSO STOCKHOLM is the fourth of the new super-tankers built by the Newport News Shipbuilding and Dry Dock Company, all of which are equipped with B & W marine boilers. Its sister ships are the ESSO SUEZ, ESSO MONTEVIDEO and ESSO CRISTOBAL.

The ESSO STOCKHOLM, like its sister ships, has an overall length of 628 feet with a beam of 82 and a half feet and a speed of over 16 knots. Its cargo oil tank capacity is 230,000 barrels.

Each tanker is equipped with two B & W two-drum, marine type, water tube boilers, each capable of generating 50,000 lbs. of steam per hour when operating at a super-heater outlet pressure of 850 psi and a total steam temperature of 850 F at normal rate. The boilers, constructed at the Baberton, Ohio, plant of The Babcock & Wilcox Company, have horizontal tubular air heaters, continuous loop economizers and convection type super-heaters. Each boiler is equipped with four B & W Iowa design oil burners.

The vessel will be propelled by a single-screw driven by high pressure geared steam turbines developing 12,500 h.p. at 112 rpm.

Six additional "Esso" fleet tankers of the ESSO STOCKHOLM type are now being built under the current construction program by the Newport News Shipbuilding and Dry Dock Company. These also will be equipped with B & W marine boilers duplicating those furnished for the first group.

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Maytham Named Westinghouse West Coast District Manager

Walter J. Maytham, Jr., formerly of Chicago, has been appointed Pacific Coast district manager for the Westinghouse Electric Corporation, according to T. Fort of Pittsburgh, Pa., manager of apparatus sales for Westinghouse.

Mr. Maytham will take over the duties which have been carried by Charles A. Dostal, vice president, who retires next May after more than 43 years' service with the company. For the last 10 years, Mr. Dostal has been in charge of the company's sales in the nine western states, Alaska and the Hawaiian Islands. Mr. Fort explained that Mr. Dostal will handle special executive assignments in the Pacific Coast District until his retirement.

Mr. Maytham will make his headquarters in San Francisco. For the past five years he has been manager of industrial sales in the company's Northwestern District, with headquarters in Chicago.

Joining Westinghouse in 1926, he served as an industrial salesman in the company's Indianapolis office until 1929 when he was transferred to the Northwestern District's headquarters in Chicago.

Mr. Maytham was appointed manager of the Petroleum and Mining Section of the Industrial Division, Northwestern District, in 1938 and held this position until his promotion to manager of Industrial Division of the Northwestern District in 1944.

Gladding, McBean Names Mahoney Manager of Central Division

James W. Mahoney, vice president, Gladding, McBean & Co., has been named general manager of the company's central division with headquarters in San Francisco, it was announced recently by Fred B. Ortman, president.

As general manager, Mahoney will be in charge of the company's activities in Northern California, Southern Oregon, Nevada, Utah and the Hawaiian and Philippine Islands.

Prior to assuming his new duties, Mahoney was assistant to the president, with offices in Los Angeles. He has been with Gladding, McBean for approximately two years, having joined the organization after 14 years with the Phillips Petroleum Co.

Mahoney succeeds C. W. Planje, who has been appointed vice president and assistant to the president, with offices in San Francisco.

One of Mahoney's first actions, in his new position, was to announce that the company's Livermore, California, fire brick plant would be closed. The Livermore activities will be transferred to the Pittsburgh (Calif.) refractories plant which has been reported to be one of the most modern plants of its kind in the country.

Gladding, McBean plans to centralize all refractory research at the Pittsburgh plant, Mahoney explained. The research laboratories in South Gate, California, will be moved to new facilities at Pittsburg, he said.

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Anchor Equipment Co., San Francisco, has been named the Pacific Coast representative of Smith & Serrell, Inc., Newark, N. J., coupling specialists.

UNION OIL'S NEW SALES MANAGER, ROY LINDEN, formerly Manager of General Sales and, from 1946 to June of this year, Pacific Northwest Manager located at Seattle. He now is in his firm's office in Los Angeles. During the war Mr. Linden was with the U. S. Army Quartermaster Corps. He is succeeded as Manager of General Sales by William L. Spencer, formerly technical assistant in head office sales.



WALTER J. MAYTHAM, JR., newly appointed Pacific Coast District Manager for the Westinghouse Electric Corporation, with headquarters at San Francisco.



JAMES W. MAHONEY . . . recently appointed Vice President and General Manager, Central Division of Gladding, McBean & Co.



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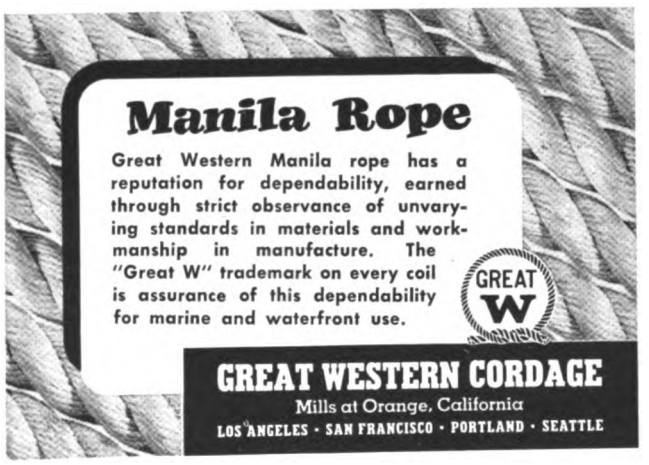
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REAR ADMIRAL BENJAMIN V. RUSSELL, Gulf Coast Manager of the Marine Department of E. F. Drew & Co., Inc., New York.

Admiral Russell Appointed E. F. Drew Gulf Coast Manager

Rear Admiral Benjamin V. Russell, U. S. Navy (Ret.) has been appointed Gulf Coast manager of the marine department, E. F. Drew & Co., Inc., of New York City. Admiral Russell will be in charge of sales and services of AMEROID marine products.

Admiral Russell served as Chief of Staff to Commander Cruisers, Mediterranean Fleet, during the war as well as in the office of Chief of Naval Operations. After the war, he was active as a staff officer during the Bikini "Operations Crossroad" project.

Admiral Russell will be responsible for the entire line of Drew Ameroid products including Ameroid complete boiler water treatment, Ameroid fuel oil heater and sludge remover, Ameroid evaporator treatment, Ameroid brine treatment, Ameroid diesel engine fuel oil treatment, etc. His headquarters will be Galveston, Texas.

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Radiomarine Announces Personnel Promotions

Harvey Butt, San Francisco, Pacific Coast regional sales manager of Radiomarine Corporation of America, announces the appointments of Charles T. McClellan as sales and service manager for Southern California and of John Parachini to the same post in San Francisco.

Mr. McClellan has been electronic sales manager for the company in San Francisco and Mr. Parachini has been in charge of service there. The former will be located at the firm's office at 437 N. Avalon Boulevard, Wilmington, and the latter at 16 First Street, San Francisco.

Warren Wells, formerly district manager for Southern California, will handle service work there.



TWO NEW STAFF MEMBERS of Ets-Hokin & Galvan, San Francisco . . . JERRY ETS-HOKIN, left, and JERRY LALOR, right.

Ets-Hokin & Galvan Appoint Two New Members to Staff

There are two new Jerries at the San Francisco headquarters office of E.s-Hokin & Galvan, California marine electricians. One is Jerry E:s-Hokin, son of Louis Ets-Hokin, president of the company, and the other is Jerry Lalor, well-known in marine electrical circles on the San F.ancisco waterfront.

Jerry Ets-Hokin, handling government work and special assignments for the company, is a recent Stanford graduate. In college he studied basic engineering and served in the United States Coast Guard during the war.

Jerry Lalor, on marine sales and service, was Pacific Coast manager of Charles Cory & Son in 1919, and held the same position for the Bendix Aviation Co. when that firm took over Cory. Later he established the Lalor Electric & Engineering Co., served with the United States Maritime Commission as an electrical inspector during the war, was with M. J. Ryan of Joslyn & Ryan, naval architects, as an electrical estimator and recently retired from the Army Transport Service, with whom he sailed.

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Hydraulic Press Appoints Western Representative

The Hydraulic Power Division of The Hydraulic Press Mfg. Company, Mount Gilead, Ohio, announces the appointment of James F. Crough as western representative for its line of hydraulic pumps, fluid motors, valves, controls and power units. Mr. Crough will handle both marine and industrial applications.

Jim Crough has had experience in hydraulics, as a service engineer for the Lidgerwood Company, and was in charge of the installation of the hydraulic steering gears on 170 ships during World War II.

He has also acted as instructor at the Marine Officers School through the University of California, and is an Associate Member of the Society of Naval Architects and Marine Engineers.

His headquarters will be at 607 Market Street in San Francisco.



SERVICE and Sales Managers for Radiomarine Corporation of America . . . left, CHARLES T. McCLELLAN, Southern California; right, JOHN PARACHINI, San Francisco.

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HYDRAULIC PRESS PEOPLE —CARL LAMB, Sales Engineer of the Hydraulic Power Division of The Hydraulic Press Mfg. Co., Mt. Gilead, Ohio, and JAMES F. CROUGH, San Francisco, the firm's Pacific Coast representative.

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EIGHT Sperry men get together at the Propeller Club luncheon in New York. Pictured left to right are: R. E. ERBENTRAUT, Assistant Marine Sales Manager; JAMES P. DUFFY, Eastern District Sales Manager; S. W. BEDELL, Sales Services Manager; ROBERT M. CUST, Southern District Sales Representative from New Orleans; DAVID H. GUEINTER, Eastern District Sales Representative; W. I. SELOVER, Southwestern District Sales Manager; D. F. O'KEEFE, Eastern District Sales Representative; and O. B. WHITAKER, Marine Sales Manager.

Fairn & Swanson Consolidates With Competing Companies

Fairn & Swanson, Inc., pioneer San Francisco slop chest operators, recently bought the competing Jorgensen-California Co. and Nelson & Jorgensen Co., and consolidated the stores at their headquarters at 137 Steuart St., San Francisco. Fairn & Swanson handle clothing, cigarettes, toiletries, linen, liquor and candy and point out they are the only establishment on the West Coast which can completely supply a ship's slop chest from their own stock. Mrs. Ruby Campbell, formerly general manager of the Jorgensen companies, joins Fairn & Swanson.

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Bailey Refrigeration Moves To New Quarters

Ralph R. Bailey, president, The Bailey Refrigeration Co., announces his company has moved to new quarters at 115 King St., Brooklyn 31, N. Y., with the same telephone number, ULster 5-3958. The company has 6,500 square feet of fireproof shop space at the new location, with more tools, equipment and refrigeration parts. President Bailey invites marine men to inspect the new plant.

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Wire Rope Institute Issues New Bulletin

Wire Rope Institute, Shoreham Building, Washington, D. C., recently issued its Bulletin No. 1 on wire rope sockets, and copies may be had for the asking from the Institute.

Albert Neroni, John A. Roebling's Sons Company, member of the Institute's publicity and advertising committee, advises the bulletin lists the industry's standards as compiled by rope manufacturers' engineers.

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"ALCO-LITE" New Trade Name Aluminum Ladder Products

Aluminum Ladder Company, Worthington, Pa., announces that its products will now be sold under the trade name "ALCO-LITE" to distinguish them from like products which are made from aluminum. The Aluminum Ladder Company reports it is the original manufacturer of Aluminum straight ladders, step ladders, extension ladders, and fire ladders and also manufactures aluminum gangways.

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Balfour Guthrie Co. Ltd. Named Distributors For Borgana

A. H. Schmidt, president of Portland Shingle Company, Portland, Oregon, has announced the appointment of Balfour Guthrie Company, Ltd., as distributors in the 11 Western states and Hawaii for the company's chemical division.

A product of the chemical division is a boiler water treatment marketed under the trade name of Borgana. Produced as a by-product of cedar shingle manufacturing, Borgana has an organic base.

In announcing the product, President Schmidt said: "Heretofore the correct method to prevent scale, corrosion, rust, etc. was thought to be a water treatment for the individual water conditions of each plant. But we know now that water undergoing a constant physical reaction will vary with each separate analysis. Therefore, a solution or compound that acts upon scale-forming elements regardless of the water's physical reaction is the answer. This is how Borgana works."



JOSEPH D. MACHADO, newly-appointed marine distributor in the Boston area for The Dampney Company of America.

Dampney Co. Announces New Distributor in Boston

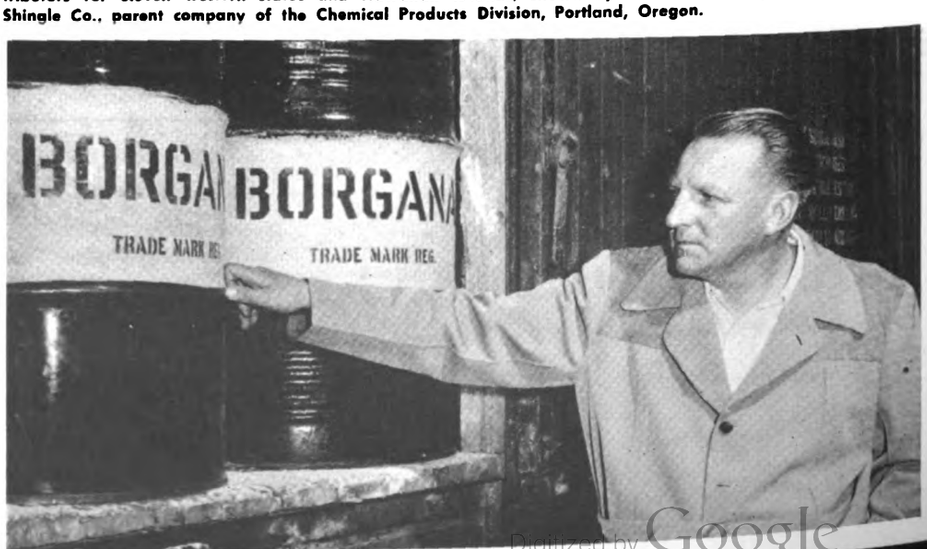
The Dampney Company of America, Hyde Park, Boston, announces appointment of Joseph D. Machado as marine distributor for the Boston area of Apexior and Thur-Ma-Lox protective coatings for the maintenance of metal. Mr. Machado's headquarters are at 102 Broad Street in that city.

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M. J. Gigy to Represent Two More Lines

M. J. Gigy & Associates, San Francisco marine manufacturers' representatives, announce their appointment as distributors for Walz & Krenzer, Inc., Rochester, N. Y. and The Fyr-Fyter Company Dayton, Ohio. Walz & Krenzer manufacture watertight door systems and other marine equipment and the Fyr-Fyter firm produces hand portable fire extinguishing equipment.

FIRST CARLOAD of Borgana leaving Portland for San Francisco destined to Balfour Guthrie who are distributors for eleven western states and Hawaiian Islands, shown by A. H. SCHMIDT, President Portland Shingle Co., parent company of the Chemical Products Division, Portland, Oregon.



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For the past 28 years Radiomarine has provided the merchant marine with specially trained radio and electronic service technicians. They visit ships in the major domestic ports . . . check equipment for high-quality performance and make necessary repairs . . . render day and night emergency service . . . instruct the ship's personnel how to operate the equipment proficiently . . . and keep radio and radar equipment in conformity with government regulations.

Radiomarine is the only radio and radar manufacturer that offers a single comprehensive marine electronic equipment service plan. Radiomarine is the only company making such equipment that designs, engineers, manufactures, sells, installs and services with a wholly-owned field service organization, specializing entirely in the marine field.

Over 100 Radiomarine service technicians—in 29 fully-equipped Radiomarine Service Stations on the Atlantic, Pacific and Gulf Coasts, on the Great Lakes and the Ohio and Mississippi Rivers—are ready to service the electronic equipment aboard your ships. Overseas, Radiomarine service facilities are available at the principal foreign ports through affiliated foreign radio companies and distributors and dealers of the RCA International Division.

As part of its well-rounded service in the marine field, Radiomarine's 13 coastal stations provide unsurpassed ship-to-shore and shore-to-ship communication for contact with vessels in all parts of the world.

Radar and its companion navigational and communications equipment used aboard merchant ships are electronic devices. Like all precision instruments, this electronic equipment needs regular checking, adjusting and maintenance. Only electronic experts are trained to spot electronic troubles accurately and to correct them.

Wherever your ships go, they'll find experienced and dependable Radiomarine Service—unsurpassed service that keeps ships operating efficiently, earning dividends. Write to Department 14K, for complete details of the Radiomarine Service Plan.

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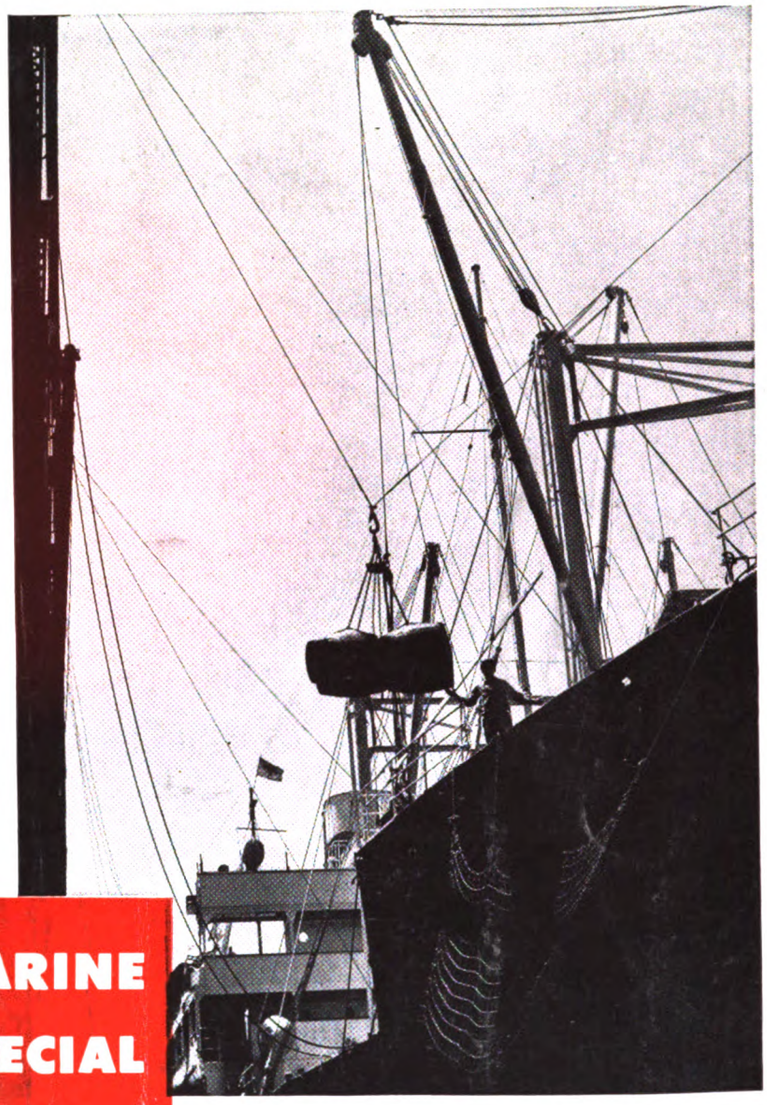
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DESIGNED specifically to relieve present dependence on blown rapeseed oil, *Texaco Marine Engine Oil Special* produces thick, creamy, exceedingly oily emulsions of high stability. It has excellent adhesiveness and does not separate, gum up, or thicken in use or in storage. It feeds well through wicks or mechanical lubricators and has less odor.

Already more than 40 operators of American flag vessels are using *Texaco Marine Engine Oil Special* in over 100 Liberty-type steamers. Their experience has proved that this outstanding new oil has superior lubricating ability, and that its use is a definite economy.

Let a Texaco Marine Engineer give you full details. Texaco Marine Lubricants are available at all U. S. deep sea ports . . . on the Great Lakes and inland waterways . . . a total of more than 350 ports around the world. The Texas Company, *Marine Sales Division*, 929 South Broadway, Los Angeles 15, California.

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THE LOG OF AMERICAS

NORDBERG DIESELS for a Wide Range of Marine Requirements

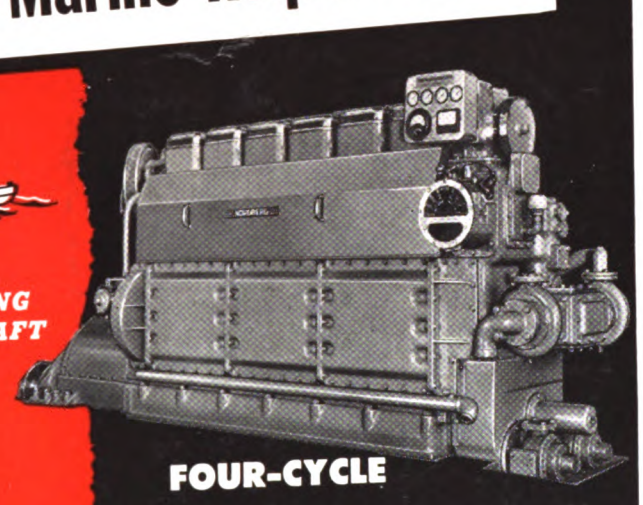
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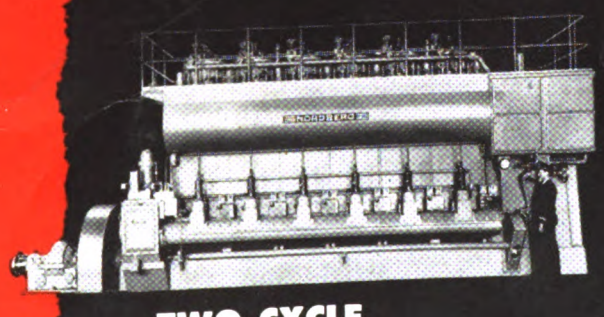
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FOUR-CYCLE

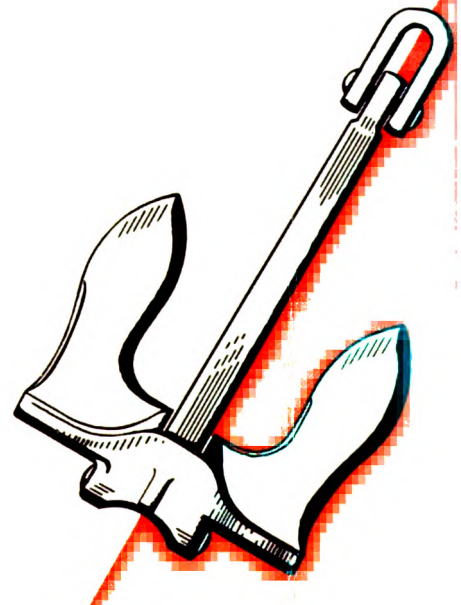


TWO-CYCLE

GEAR AND DIRECT DRIVE
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See page 3

NORDBERG
DIESEL ENGINES



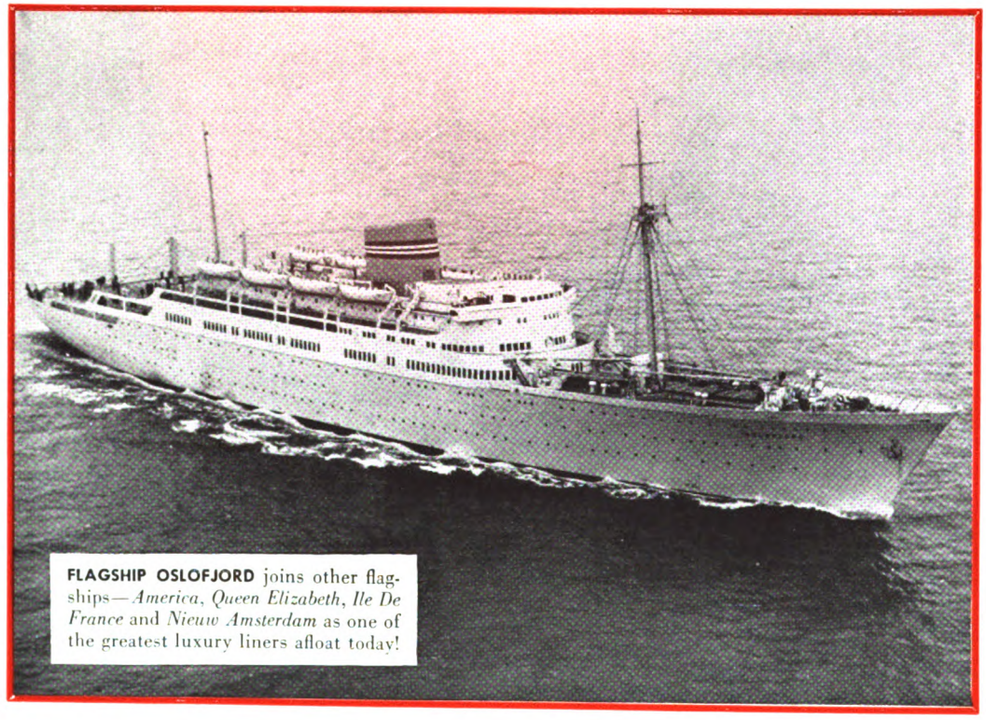
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FLAGSHIP OSLOFJORD joins other flagships—*America*, *Queen Elizabeth*, *Ile De France* and *Nieuw Amsterdam* as one of the greatest luxury liners afloat today!

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Protected by
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Now in regular Atlantic service, Norway's new flagship OSLOFJORD offers ocean travelers the last word in comfort, speed and safety.

She's powered by two 10,000 H.P. double-acting Diesels . . . cruises at over 20 knots. To make sure of top performance from main engines and auxiliaries, her owners, Norwegian America Line, specified Gargoyle Marine Oils, stem to stern!

GARGOYLE
Marine Oils

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Are Your Boiler Deposits Magnetic?



If boiler deposits are magnetic, they are probably iron oxides—the most frequent cause of tube failure in high pressure marine boilers!

Iron oxides are caused by normal corrosion in condensate and feedwater systems and enter boilers with the feedwater. The use of distilled water and a straight chemical boiler water treatment cannot prevent iron oxide deposits from causing tube failures.

AMEROID COMPLETE BOILER WATER TREATMENT not only does everything that a straight chemical water treatment will do but also solves the problems of iron oxide deposits two ways! Special organics included in the treatment make iron oxides and other suspended matter non-adherent. In addition, Ameroid Complete Boiler Water Treatment raises the pH of the condensate—reduces corrosion—and decreases the amount of iron oxides that enter boilers.

Try the magnet test! If the deposits in your boilers are magnetic, it will pay you to investigate AMEROID COMPLETE BOILER WATER TREATMENT.

AMEROID

for further information, write

E. F. DREW & CO., INC.

MARINE DEPARTMENT 15 EAST 26th STREET, NEW YORK 10, N. Y.

Complete Ameroid service by **DREW** engineers is available in principal seaports in the United States, Canada, Panama Canal Zone, Argentina, Brazil, Belgium, France, Italy, Egypt, Union of South Africa, Curacao and Aruba.

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Sperry Loran joins North Atlantic weather patrol

■ This Coast Guard Cutter... one of the ocean station vessels in the International North Atlantic Weather Patrol... maintains an assigned position far at sea *regardless of weather conditions.*

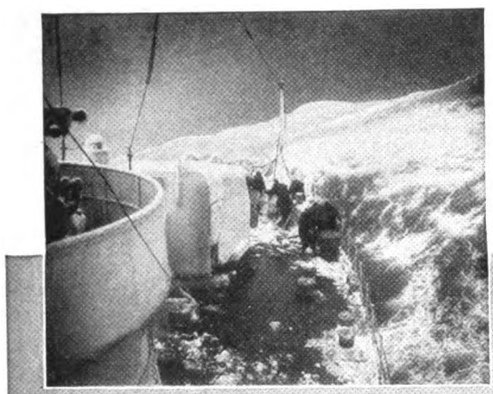
■ Sperry's Loran provides these ships with accurate position data . . . enabling them to remain on their assigned station at all times, even when overcast weather makes it impossible to obtain celestial observations.

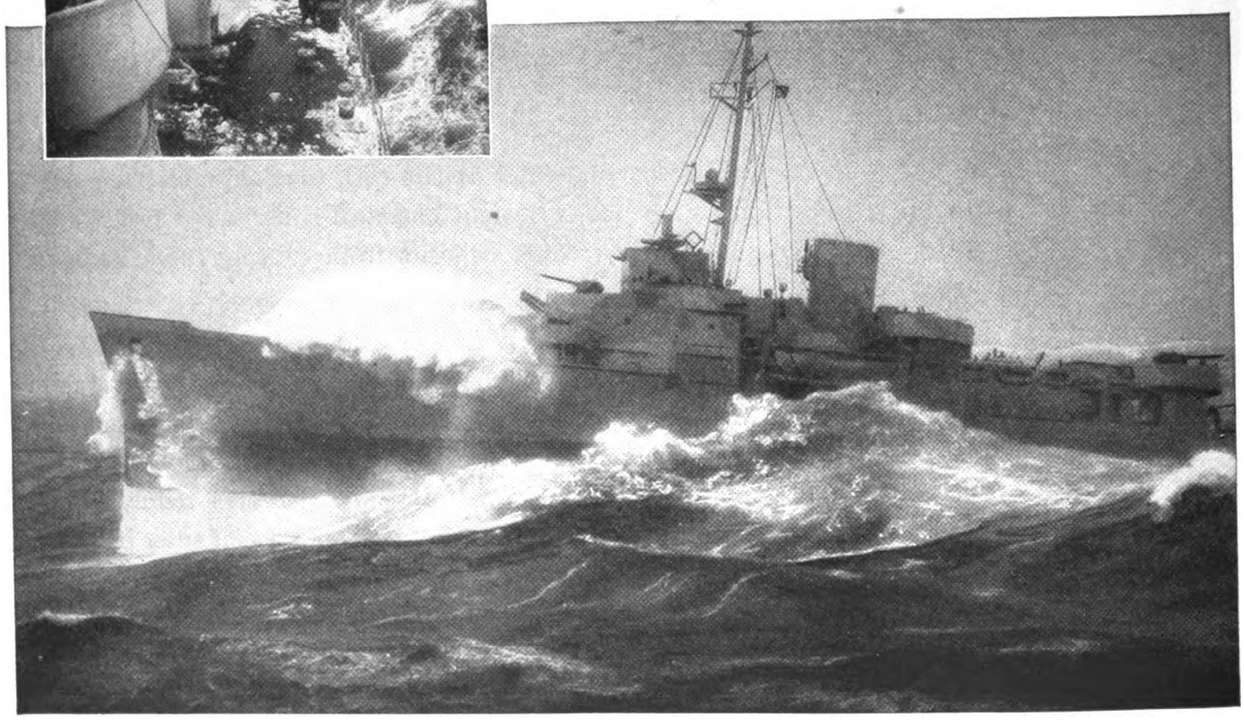
■ The job cut out for ocean station vessels is an important one—and arduous. Besides supplying meteorological information to the Weather Bureau, they monitor international distress frequencies for emergency and safety communications, and furnish search-and-rescue service to surface vessels and transoceanic aircraft.

■ Among other services, these Coast Guard Cutters — with their radio direction finder beacons — serve as navigational aids to aircraft . . . help surface ships determine position.

■ In foul weather, the urgency of these services increases. Regardless of fog, rain or snow, however, Coast Guard personnel can get quick, accurate fixes with Sperry Loran.

■ Write our nearest district office for additional information on Sperry Direct-Reading Loran.





Visit Sperry Booths 133-134 at National Motor Boat Show

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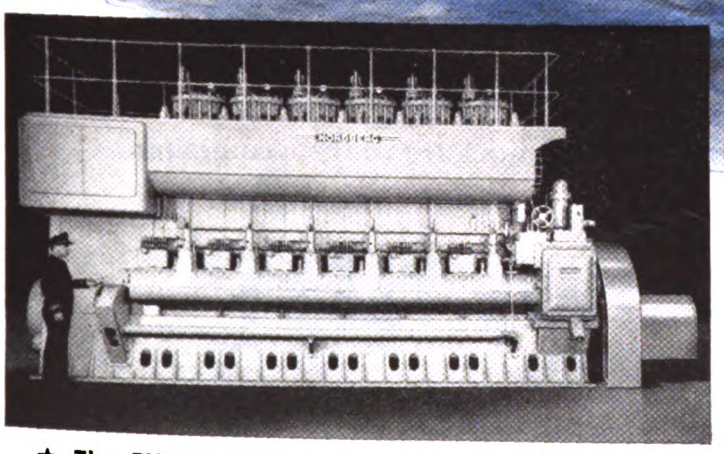
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NORDBERG DIESEL

provides dependable propulsion for the **MS** *TYDOL FLYING A*





★ The *TYDOL FLYING A* is one of twenty similar single screw vessels powered by a 6-cylinder, 18" x 25" 1400 H.P. Nordberg two-cycle Marine Diesel Engine.

THE tanker *TYDOL FLYING A*, of the Tide Water Associated Oil Company fleet, has established a reputation for dependable service . . . in the 467 day period starting March 4, 1948, for example, she transported 3,718,000 barrels of products from the company's Bayonne refinery. During that time, the vessel's sailing was not once delayed by any difficulties with her Nordberg main propulsion engine.

Built in sizes from 10 to 8500 H.P., Nordberg Diesels offer a dependable solution to practically every marine propulsion or auxiliary power problem. Write for details, outlining your specific requirements.

NORDBERG MFG. CO., Milwaukee 7, Wis.

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A half century of Caribbean service underscores today's function of the Great White Fleet. Here are fast, fully-refrigerated cargo and passenger vessels—modern and spotless—fit, willing and able to serve shippers and travellers in Inter-American trade. Competent staffs, afloat and ashore, and modern equipment and facilities are yours to command.

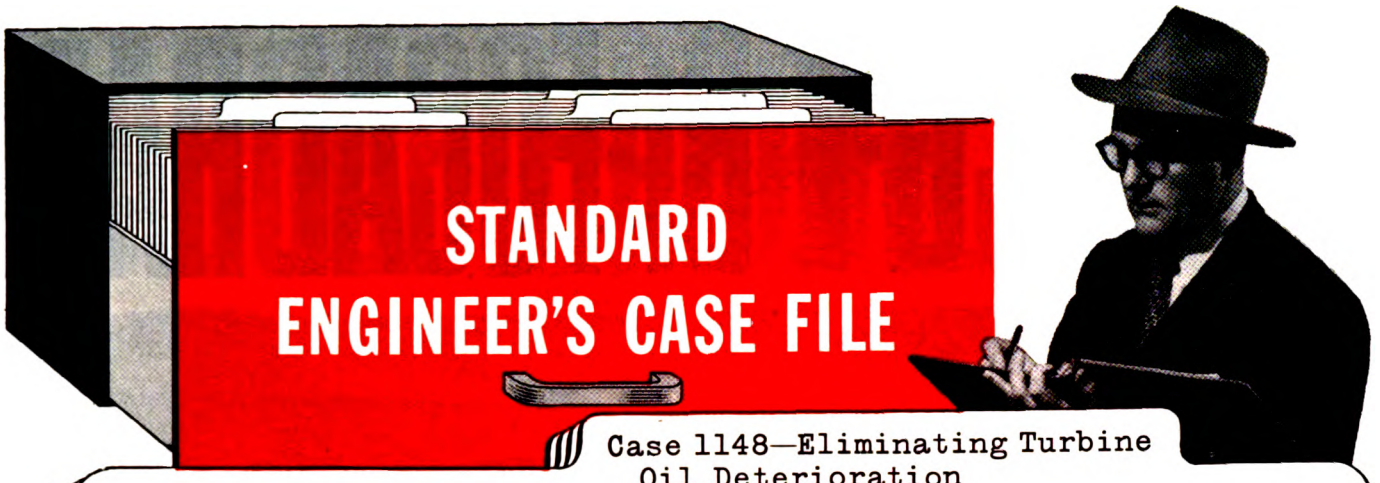
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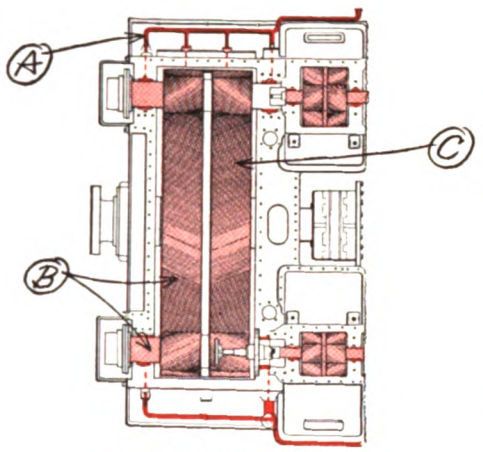
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STANDARD ENGINEER'S CASE FILE

Case 1148—Eliminating Turbine Oil Deterioration



TURBINE REDUCTION GEARS

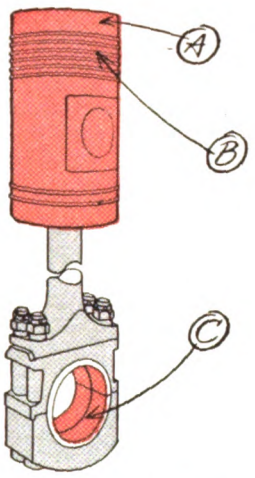
A laboratory analysis of a sample of Calol OC Turbine Oil taken from a continuously operating, heavily loaded turbine after four years of use showed the oil had not increased in acidity or deteriorated in any way. Lines, sumps and governor control were clean and bearings, gears and other parts in good condition. Calol OC Turbine Oil comes in 4 grades: 9, 11, 15, 19.

A. Contains a highly effective oxidation inhibitor — prevents the formation of sludge, gum, lacquer and deposits in lines and on parts.

B. Corrosion inhibitor stops rusting — in official tests, Calol OC Turbine Oil in both fresh and salt water kept steel strips from rusting while they were in the water-oil mixtures for 48 hours.

C. Has excellent metal-wetting ability and high film strength — withstands the heaviest gear and bearing loads and reduces wear.

Case 1153—Reducing Operating Costs on Large Marine Diesels



MARINE DIESEL PISTON ASSEMBLY

Many ship operators have proved that Calol Marine Oil reduces lubricating costs, prevents excessive friction and wear and maintains tight seals in large Diesel propulsion engines. Recommended for all marine Diesels where an uncompounded oil is satisfactory. Comes in five grades: 55, 65, 75, 90, 120 — SAE 20 to SAE 60.

A. Has high viscosity index — resists highest operating temperatures and minimizes gum formation.

B. Made from selected paraffinic type oils with low carbon residue — resists formation of carbon and sludge deposits that stick rings, cause blow-by.

C. Various grades have low pour points ranging from zero downward — assure good lubriation in all atmospheric and operating conditions.

Because of its high resistance to oxidation, non-corrosive and lubricating qualities, Calol Marine Oil is also used in enclosed reduction gears.

For additional information and the name of your nearest Distributor, write

STANDARD OIL COMPANY OF CALIFORNIA

225 Bush Street, San Francisco 20, California

The California Oil Company
Barber, N. J., Chicago, New Orleans

The California Company
17th and Stout Streets, Denver 1, Colo.

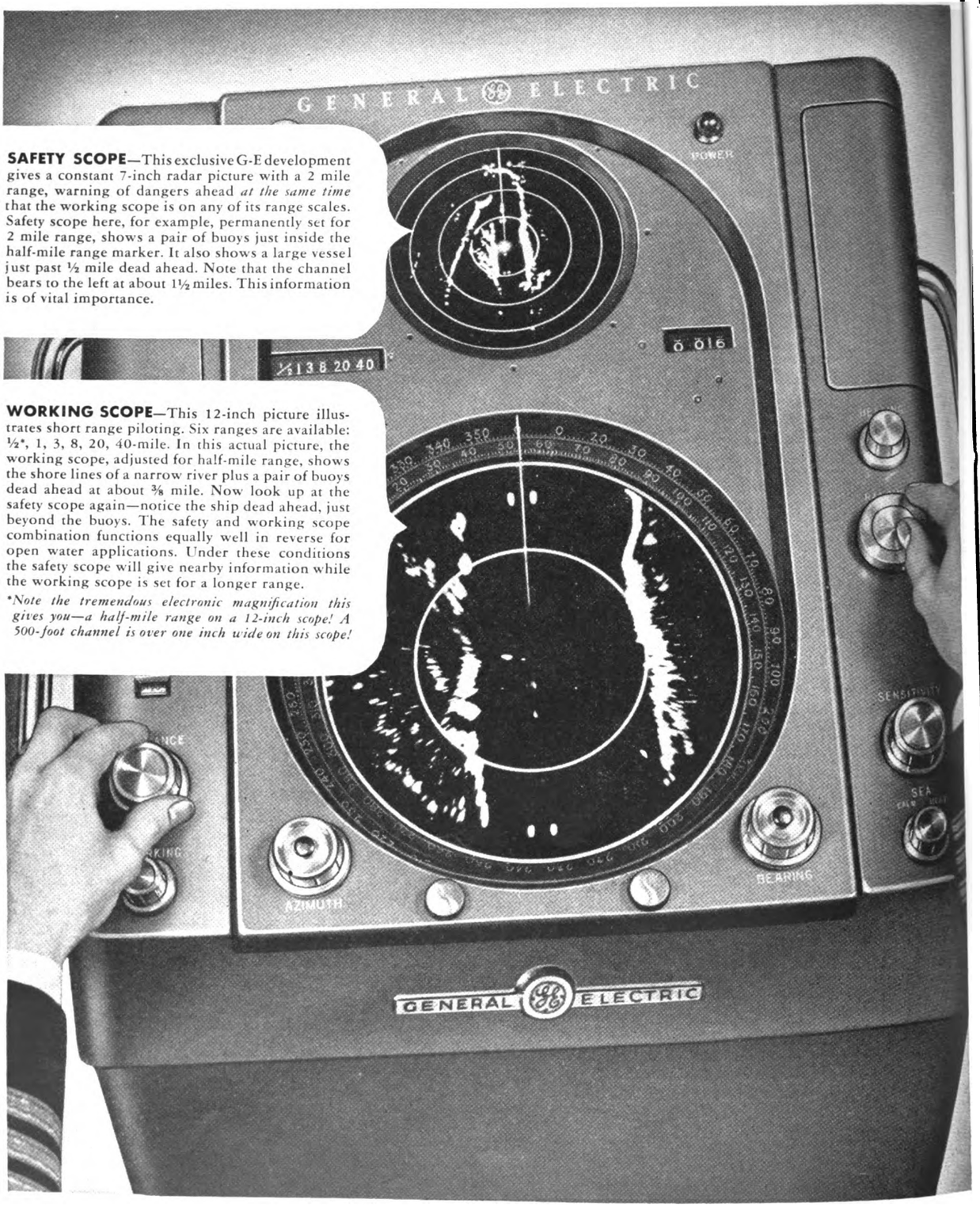
Standard Oil Company of Texas
El Paso, Texas

CALOL

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New G-E Bi-FOCAL RADAR



SAFETY SCOPE—This exclusive G-E development gives a constant 7-inch radar picture with a 2 mile range, warning of dangers ahead *at the same time* that the working scope is on any of its range scales. Safety scope here, for example, permanently set for 2 mile range, shows a pair of buoys just inside the half-mile range marker. It also shows a large vessel just past ½ mile dead ahead. Note that the channel bears to the left at about 1½ miles. This information is of vital importance.

WORKING SCOPE—This 12-inch picture illustrates short range piloting. Six ranges are available: ½*, 1, 3, 8, 20, 40-mile. In this actual picture, the working scope, adjusted for half-mile range, shows the shore lines of a narrow river plus a pair of buoys dead ahead at about ⅜ mile. Now look up at the safety scope again—notice the ship dead ahead, just beyond the buoys. The safety and working scope combination functions equally well in reverse for open water applications. Under these conditions the safety scope will give nearby information while the working scope is set for a longer range.

**Note the tremendous electronic magnification this gives you—a half-mile range on a 12-inch scope! A 500-foot channel is over one inch wide on this scope!*

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gives DUUBLE-PROTECTION



● There is nothing like it in **commercial radar** today—The new General Electric **Bi-Focal 3cm** Radar, developed at Electronics **Park and rigorously** tested in actual operation, **enables the navigator** to study *long and short range* ***scales at the same time!*** Designed for narrow channels, **harbors and** rivers, as well as open water, **this radar has two** viewing screens for safety and convenience.

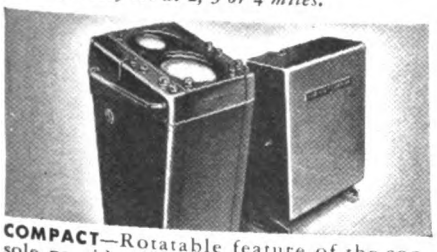
FREE Fact Bulletin—

Gives complete specifications and information on the new Bi-Focal Radar, and includes full data on the complete G-E radar line. Write for it today. *General Electric Company, Transmitter Division, Electronics Park, Syracuse, New York.*

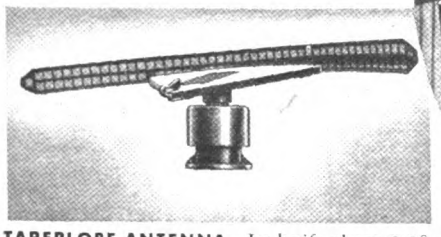


UNMATCHED FEATURES ● *Working Scope*—12-inch tube presents man-sized picture for short range piloting or long range navigation ● *Six Ranges*—½, 1, 3, 8, 20, 40-mile ● *Safety Scope*—An exclusive G-E feature, presents a constant 2-mile picture* ● *Adjustable Console*—May be rotated, elevated or depressed ● *Remarkably Compact Design*—Fits neatly in limited wheelhouse space ● *Finest Performance*—Meets or exceeds requirements of Coast Guard Advisory Specifications—Brief I, and requirements of Lakes Carriers Association Radar Specifications.

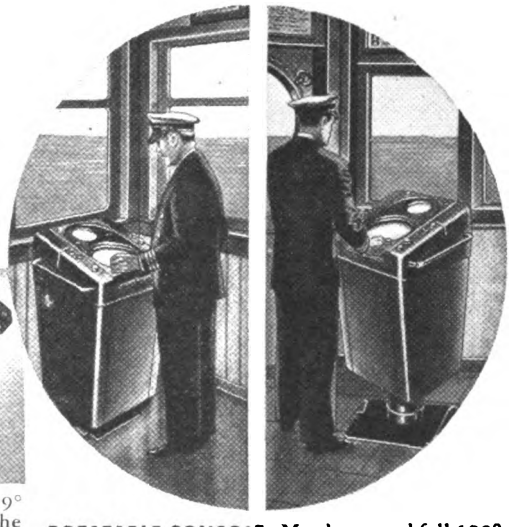
**Depending upon the vessel and its class of service, the safety scope range may be factory-set at 2, 3 or 4 miles.*



COMPACT—Rotatable feature of the console provides easy accessibility even when mounted in close quarters. Transmitter-receiver cabinet (right) is 33" high, 25" wide, and 12" deep. Can be mounted under a wheelhouse window without obstructing view.



TAPERLOBE ANTENNA—Its knife-sharp 0.9° beam multiplies the effective power of the G-E Bi-Focal radar by factor of 5 over conventional 2° beams. No "null" spots due to lobes. Special heating device on antenna prevents loss of range due to icing.

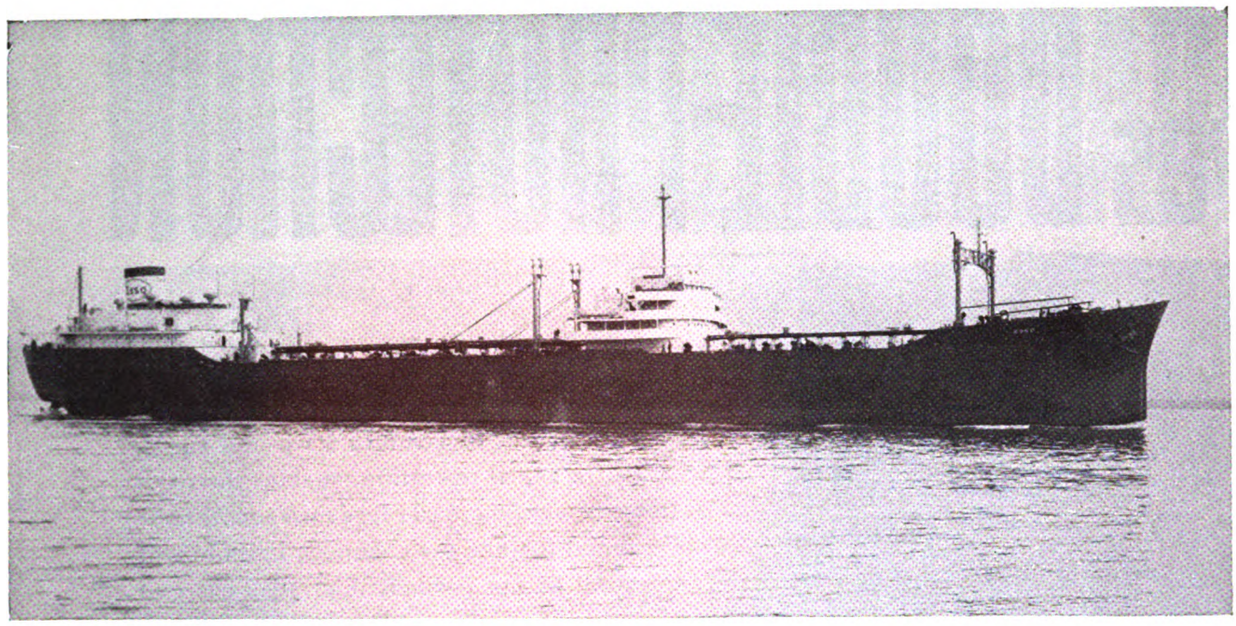


ROTATABLE CONSOLE—May be turned full 180° to starboard or to port. Barber chair type of pedestal permits easy height adjustment to suit user.

You can put your confidence in—

GENERAL ELECTRIC

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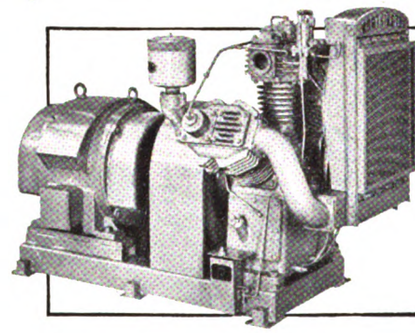


AIR FOR ALL PURPOSES

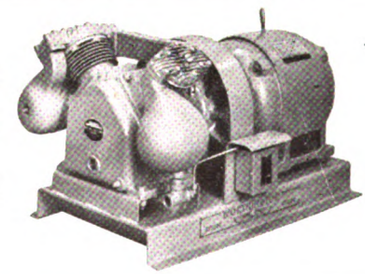
Worthington Air Compressors on the New Super-Tankers

The new super-tankers being built by both Sun and Newport News are equipped with Worthington Soot Blowers & Ship's Service Air Compressors, and Worthington Combustion Control Air Compressors. Especially designed for shipboard service, these completely automatic compressors are compact and rugged, yet as light in weight as is consistent with best engineering practice.

Worthington's many years of Marine experience have been built into these vital auxiliaries which give daily proof that *there's more worth in Worthington.* Consult with Worthington's Marine engineers to solve your shipboard Air Compressor problems by contacting *Worthington Pump and Machinery Corporation, Marine Division, Harrison, N. J.*



Worthington Soot Blower & Ship's Service Air Compressor Model V3A2 ... Size: $\frac{4}{6}$/5 x 5 in. 110 cfm actual . . . 125# . . . 30 hp . . . 870 rpm.



Worthington Combustion Control Air Compressor Model TB . . . Size: $3\frac{7}{8}/2\frac{5}{16}$ x $2\frac{1}{8}$ in. 20 cfm actual . . . 125# . . . 7½ hp . . . 1750 rpm.

WORTHINGTON

M9-3

WORLD'S BROADEST LINE OF ENGINE ROOM AUXILIARIES

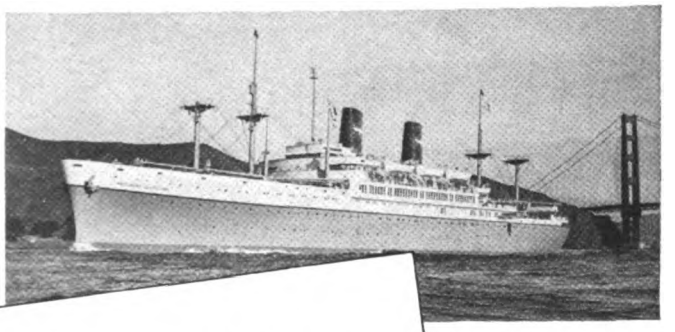
Compressors • Diesel Engines • Turbines & Turbo-Generator Sets
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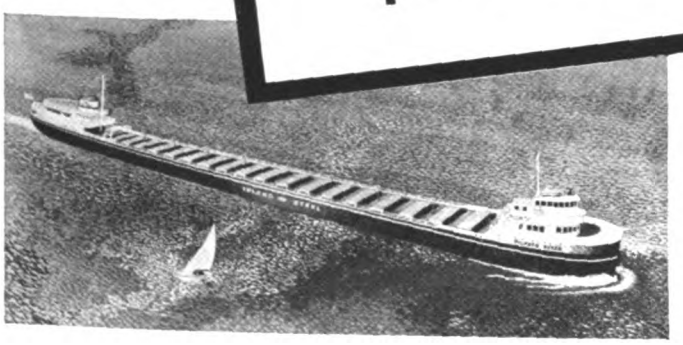
Ore Carriers — Ocean Going — Outstanding among postwar ships are eight large ore carriers built by Bethlehem-Sparrows Point Shipyard, Inc., for the Ore Steamship Corporation. These vessels are equipped with the highest pressure marine boilers ever applied commercially. There are 2 C-E Boilers on each ship, bent tube Type V2M; capacity – 50,600 lb steam per hr; operating pressure – 1450 psi; total steam temperature – 750 F.

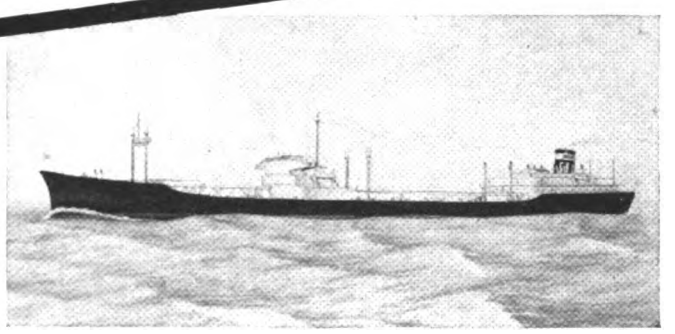
The "President" Ships — Both the President Cleveland and President Wilson of the American President Lines are powered with C-E Boilers. These ships, largest merchant vessels ever built on the Pacific Coast, have 4 Type V2M boilers per ship; capacity – 40,000 lb steam per hr; operating pressure – 600 psi; total temperature – 840 F. Built by the Bethlehem-Alameda Shipyards, Inc., they rank among the finest passenger ships afloat.





Distinctive Post-War Ships powered by C-E Boilers





Ore Carrier — Great Lakes — When the ultra-modern ore carrier S. S. Wilfred Sykes, now building at the Lorain Yards of the American Ship Building Company, goes into service, the Inland Steel Company will add to its fleet the largest ore carrier ever built on the Great Lakes. Steam for the turbines will be generated by two C-E Boilers, bent tube Type V2M; capacity – 32,000 lb of steam per hr with an overload capacity of 48,000 lb; operating pressure—450 psi; total steam temperature—750 F.

Tankers — Three new super tankers were laid down during the first half of 1949 at the Camden Yard of the New York Shipbuilding Corporation for Philadelphia Tankers, Inc. These are among the largest ships now under construction, being 660 ft overall length, 85 ft beam, and having a full deadweight load capacity of 30,000 tons. All three ships are powered with C-E Sectional Header Boilers, 2 boilers per ship; normal capacity per boiler is 65,000 lb of steam per hour. B-364

C-E

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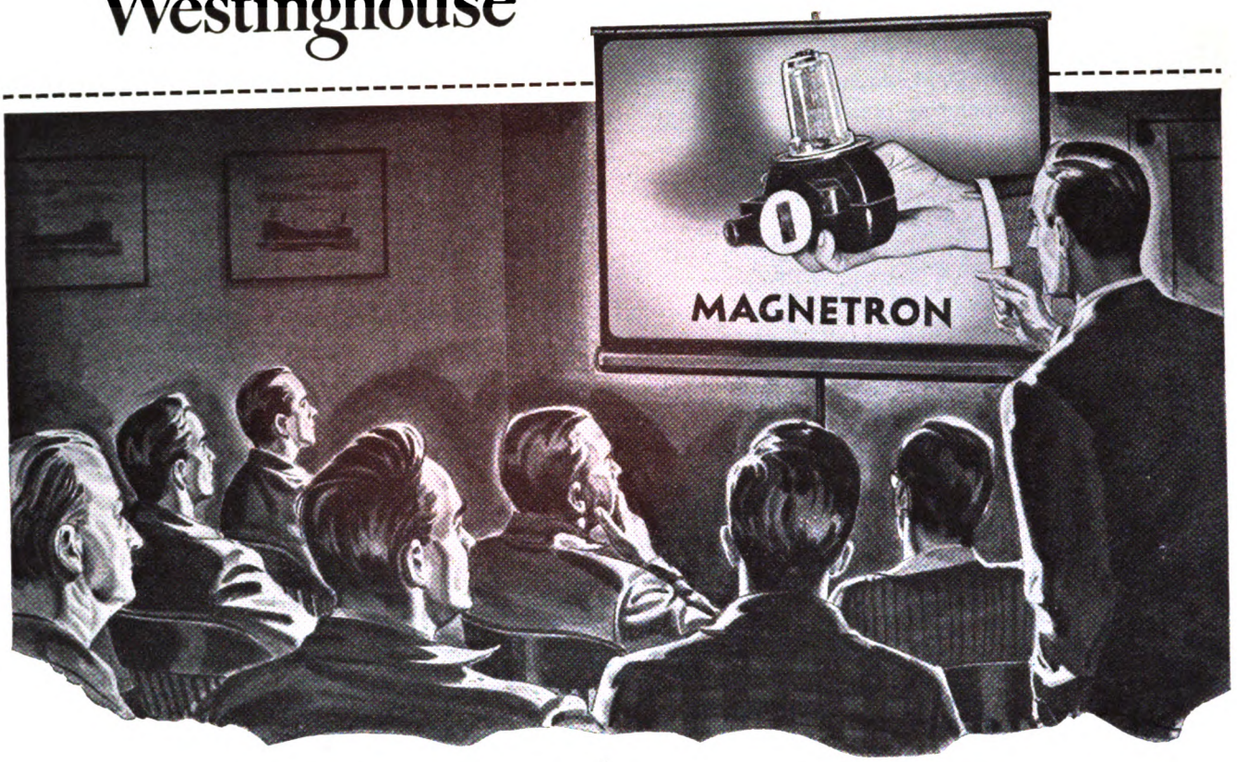
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BUILT for marine use, these rugged lube oil and jacket water coolers are of non-ferrous construction throughout.

Tubes and tube sheets are of Anaconda 30% Super-Nickel 702 with Anaconda Brass baffles. Shells are made from seamless Anaconda Copper Tubes.

Super-Nickel 702 is but one of eight standard and several special alloys widely used in condensers and heat exchangers in the marine field, in public utility plants, petroleum refining and wherever long service under severe operating conditions is essential.

Engineers and equipment manufacturers are invited to use the broad experience and metallurgical knowledge of our Technical Department in determining the most suitable alloys for specific heat exchange requirements. For general information on Anaconda Condenser and Heat Exchanger Tubes and Tube Sheets, send for Publication B-2.

Group of completed Ross Type BCP Lube Oil and Jacket Water Coolers ready for the shipyards. Cutaway tube bundle shows roller expanded and flared Super-Nickel Tubes in Super-Nickel Tube Sheet and heavy brass baffles. Built by Ross Heater & Mfg. Co., Inc., Buffalo, New York. 48138

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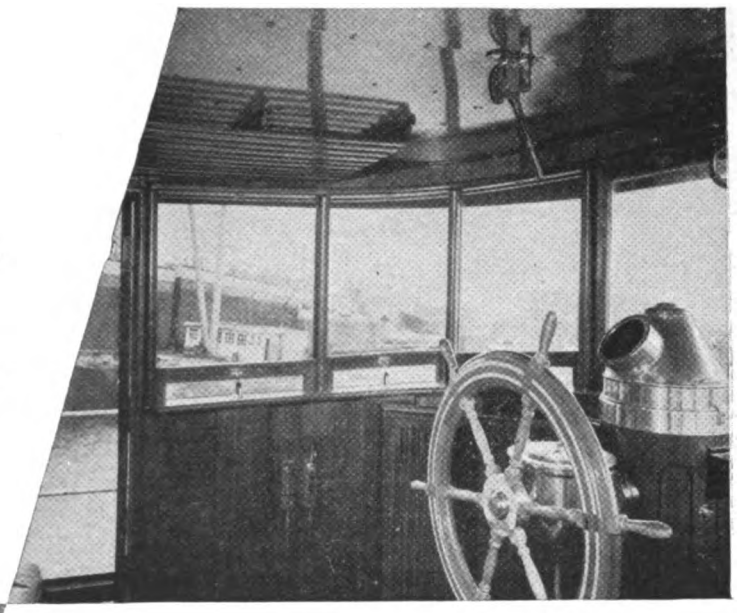
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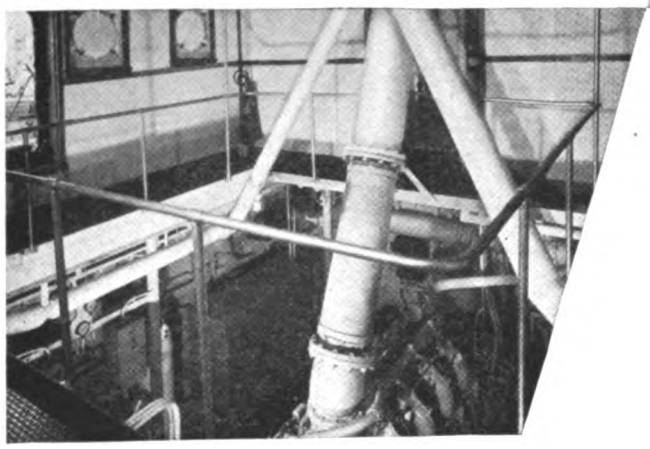
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More and more, the many advantages of quieting diesel harbor craft against internal engine noise are being recognized. Results show that there is greater crew comfort... and therefore less fatigue. Day to day operating efficiency is decidedly increased, due to the reduction of high frequency engine noise that interferes with verbal orders, bell signals and conversation.

Johns-Manville Marine Acoustical Materials are specially designed to meet all the requirements of marine service. They are noncombustible and highly resistant to moisture and mold. J-M acoustical materials meet Coast Guard, Maritime Service and Navy specifications. These materials are especially adaptable to harbor craft...

J-M Marine Acoustical Unit: A composite sheet consisting of a rigid, fireproof, sound absorbent 1" block backed with Asbestos Paper and then grommeted to a facing of perforated Marine Veneer.

Perforated Marine Veneer: A rigid, smooth surfaced 3/16" sheet, made of asbestos fibre and cement, furnished ready for painting and perforated to permit passage of sound into the absorbent backing material.

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1891 - 1949

FIFTY-EIGHT YEARS OF SERVICE

Newport News Hulls No. 1 and 2 built in 1891 are shown on September 28, 1949, in the waters of their birth, Hampton Roads. After fifty-eight years of service both vessels are still working daily. Hull No. 1, formerly the DOROTHY, is now the J. ALVAH CLARK of the Wood Towing Company. Hull No. 2, formerly the EL TORO, is now the VIRGINIA of the Norfolk Dredging Company.

These two vessels are further operating evidence of the fulfilment of the policy established by the Newport News Founder, Collis P. Huntington: "We shall build good ships here at a profit if we can, at a loss if we must, but always good ships."

NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY

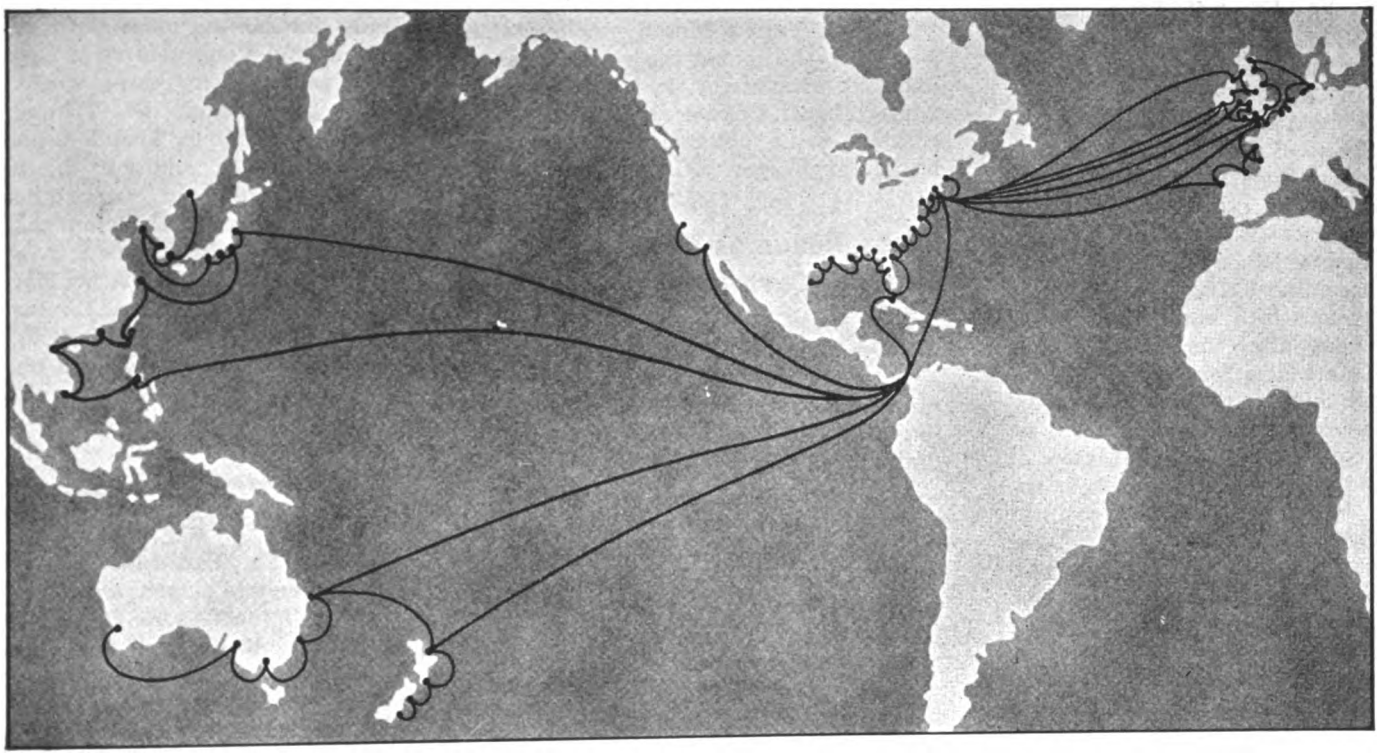
NEWPORT NEWS, VIRGINIA

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Across the Atlantic . . . to and from European ports . . . and over the Pacific . . . from East Coast ports to the Far East and return . . . a new fleet of 47 ships owned by this Company speed shipments on regular, dependable schedules

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Weekly sailings from Atlantic Coast ports to: Amsterdam, Antwerp, Cherbourg, Cobh, Hamburg, Havre, London, Rotterdam, Southampton—with fortnightly calls at Bremen, Dundee and Hull. *Bi-weekly sailings* to Belfast, Cobh, Dublin, Glasgow, Liverpool, Manchester and French Atlantic Ports.

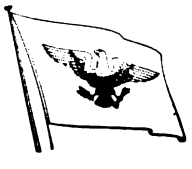
PACIFIC SERVICES

Regular sailings from Atlantic Coast and Gulf ports, via Panama Canal, to: Adelaide, Brisbane, Fremantle, Melbourne, Sydney and New Zealand and Tasmanian ports. From Atlantic Coast ports, via Panama Canal and Honolulu to: Hong Kong, Manila, Shanghai and ports in Indo-China, Japan, Manchuria, Russia-in-Asia.



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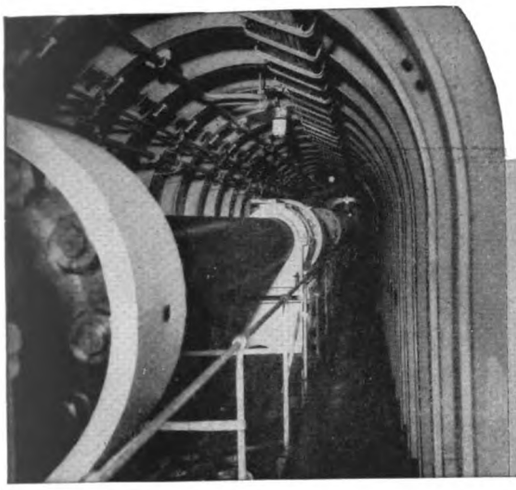


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SHAFT ALLEY Chatter

25th Anniversary Voyage For Capt. W. W. Kuhne

Captain W. W. Kuhne of Lake Mohawk, N. J., veteran American shipmaster, sailed on his "25th Anniversary Voyage" with American Export Lines when the ss EXCAMBION, one of the new "4 Aces," left Pier D, Jersey City, November 1, on a 12,000-mile, 45-day cruise to Mediterranean ports.

Captain Kuhne joined American Export Lines on December 6, 1924. He will celebrate his twenty-fifth anniversary while at sea, the day after the EXCAMBION sails from Marseilles for home.

The oldest skipper in number of years' service for American Export Lines, he joined the company in 1924 as Master of a Hog Island type freighter known as the City of St. Joseph. He later commanded several other of the company's vessels, including the prewar "4 Ace" passenger vessels, EXETER and EXCAMBION. During the war, while in command of the EXPRESS, he was torpedoed in the Indian Ocean, and with surviving members of his crew, made the African Coast in a lifeboat.

Captain Kuhne started his career at sea in 1902 sailing on four-masted barques and skysail yarders, ultimately acquiring his license as Master of sailing vessels. He recalls, with pride, one voyage on a four-masted barque from Cardiff, Wales, to Nagasaki, Japan in the then record breaking time of 198 days. Captain Kuhne holds a commission as Lieutenant Commander in the Navy.

As Master of the prewar "Ace," EXCAMBION, he commanded the last American passenger vessel to leave Europe following our entry into World War II. This voyage from Lisbon to New York, with an over-capacity list of repatriates, was made under tense blackout conditions, in a zigzag course and at full speed to evade German subs reported along his course.

Captain Kuhne's son, William F., who also has served as skipper, is presently chief officer of ss EXHIBITOR, express cargo vessel in the North Atlantic-Red Sea, India, Ceylon and Burma route.

⚓ ⚓ ⚓

Schilling Named Treas.- Director of Moran Towing

Fred Schilling, comptroller of Moran Towing & Transportation Co., Inc., for the past six years, has been elected treasurer and a director of the firm, it was recently announced.

Mr. Schilling, a Moran employe since 1919 when he joined the company as an assistant bookkeeper, succeeds Ray Fox who resigned October 15, but who will continue to be affiliated with the firm in an advisory capacity.

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Alcoa Resumes Regular Norfolk-Caribbean Service

The Alcoa Steamship Company announces it will bring back to Norfolk regular service to the West Indies and South America, which the company maintained out of that port from 1927 to the outbreak of World War II.

Alcoa resumed a regular run, with a sail-every three weeks, on October 29. The first ship to sail was the 13,000 ton ALCOA PEGASUS, a C-1. It was said that the company will use only C-1's in the service, thus assuring shippers fast, efficient handling of their freight.

Alcoa's vice president in charge of freight, W. H. Griffin, said that the company is returning to the Norfolk service in order to provide highly productive local industries with dependable, easily accessible shipping facilities.

In returning to an established Norfolk schedule, Alcoa reports they will be the only line serving many ports of the West Indies and Venezuela on a regular basis. The sailing every three weeks calls for stops at Bermuda, St. Thomas, Guadeloupe, Martinique, Trinidad, and Guanta, Venezuela. In addition to these calls, ships will stop, on every other voyage, at St. Kitts, Antigua, Dominica, St. Lucia, Grenada, and St. Vincent.

The company said that its Norfolk office will also accept shipments for Georgetown, British Guiana, and Paramaribo, Netherlands Guiana. Cargo destined for these ports will be transshipped at Trinidad.

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Pacific Far East Inaugurates New Passenger Service

Pacific Far East Line has inaugurated its new deluxe passenger service with the sailing of the GEORGE LUCKENBACH from Los Angeles. The service is on a monthly basis and will take passengers to Havana, Marseille, Genoa, Venice, Trieste, Piraeus, Haifa, Tel Aviv and Tunis.

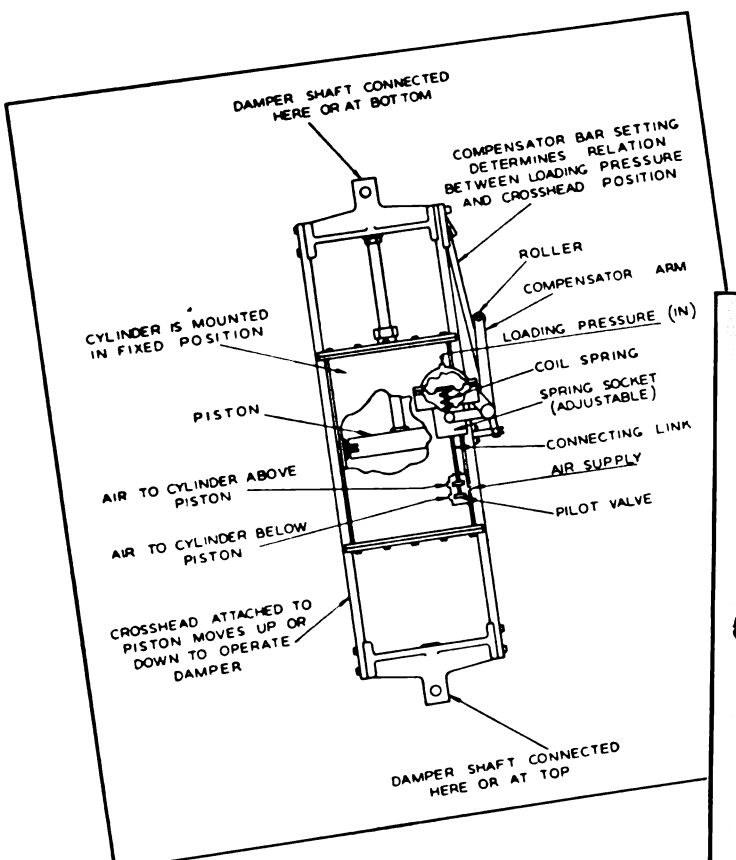
Cargo liners accommodate 12 passengers with single fares starting at $450.00 one way.

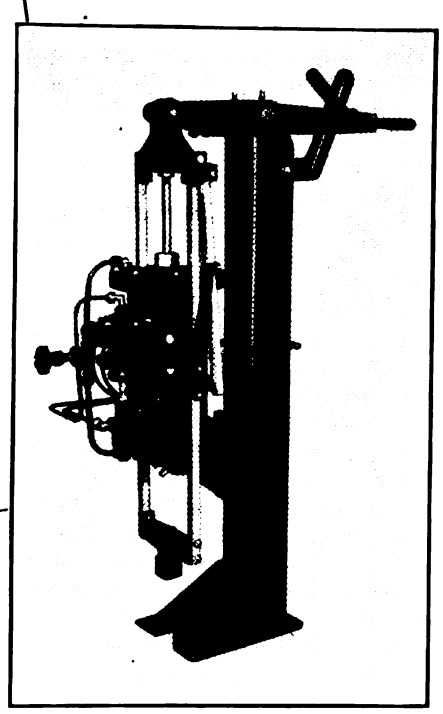
THE HONORABLE SCHUYLER OTIS BLAND, Member of Congress, and Chairman of the House Merchant Marine and Fisheries Committee, receives the American Legion Distinguished Service Medal and a Citation from HENRY C. PARKE, Commander, Robert L. Hague Merchant Marine Industries Post No. 1242 of the American Legion at the Guard of Honor Dinner Dance in Judge Bland's honor.



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Fast, Precise **Damper Operation** in HAGAN AUTOMATIC COMBUSTION CONTROL





The *Damper Operator* is the power element in the Hagan Automatic Combustion Control system. The Master Sender converts variations in steam pressure into pneumatic control signal pressure; the Boiler Relay receives the master control signal and relays it to the Damper Operator; and the Damper Operator converts the control air pressure into damper movement.

In the Hagan system this movement is extremely rapid—from full opening to full close, if it should be required, in less than two seconds. Positioning is positive and accurate, providing the precise damper opening which, coordinated with control of fuel flow, will maintain constant steam pressure and optimum air-fuel ratio.

The diagram shows how the Hagan Damper Operator works. The loading pressure from the Boiler Relay is imposed on the Diaphragm, which operates the pilot valve on the cylinder. As the pilot valve is moved from its neutral position, high pressure air is admitted to one end or the other of the cylinder, while the opposite end is opened to the exhaust.

Movement of the piston, which takes a definite position for each value of loading pressure, causes the damper to assume a corresponding position. The extent of piston movement produced by each change of loading pressure is determined by the angle of the Compensator Bar. This moves with the piston and, through the Compensator Arm, varies the compression on the Spring to the extent required to restore the Diaphragm to neutral. The same operation also closes the pilot valve, thus stopping further piston movement.

The simplicity, precision and positive action of the Damper Operator is characteristic of all components of the Hagan combustion control system. For more detailed information fill in and mail the coupon below, or write to Hagan Corporation, Hagan Building, Pittsburgh 30, Pa.

HAGAN

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Hagan Building
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Please send me a copy of the article "Marine Combustion Control Operation, Maintenance and Design."

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SHAFT ALLEY (continued) Chatter



RALPH HYLTON . . . newly-promoted to United States Manager of De La Rama Steamship Co.

Ralph Hylton Promoted By De La Rama Steamship Co.

Appointment of Ralph M. Hylton as United States Manager for the De La Rama Steamship Co. is announced by Sergio Osmena, Jr., president of the company.

Since graduating from Oregon State in 1926, Hylton has served in various executive positions in a diversified field of steamship operations. He joined the De La Rama organization May 1, 1943 and after varied assignments on the Pacific Coast was transferred to the New York offices of the Line in 1947 as Assistant U. S. Manager from which post he has been advanced to his new position in which he will supervise all De La Rama activities in the United States from present headquarters in New York.

Mr. Osmena, son of the former Philippine President, discloses that the expansion plans announced earlier this year are well under way and that the first of the three new ships presently being built for the line will be delivered within the next few months.

Coastwise Line Announces Traffic Department Changes

George Hutton, who has been Alaska freight agent at Portland for Coastwise Line has been transferred to Seattle in charge of Alaska freight solicitation for Coastwise Line in the Puget Sound area. Coastwise Line has Seattle offices established at both Ames Terminal and with International Shipping Company.

Hutton is replaced at Portland by F. L. McKillip.

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American Export Lines Names Top Engineering Officials

L. S. Andrews, vice president of operations, American Export Lines, announces the appointment of Frank J. McCormack as superintendent engineer, a newly created position, and George J. Mortensen as port engineer of the company.

Mr. McCormack joined American Export Lines as a chief engineer in 1925 after working with Cresson Morris Company, subsidiary of Cramps Shipyard, Philadelphia. He served American Export Lines as assistant port engineer and assistant to the marine superintendent in charge of new construction until his appointment as port engineer in February, 1948.

Mr. McCormack is succeeded as port engineer by Mr. Mortensen. Upon completing his course at the New York State Maritime College, Mr. Mortensen joined American Export Lines as a cadet engineer and served on several vessels in various capacities up to chief engineer. In 1945 he was assigned to the company's shore staff as assistant to the port engineer and was promoted to assistant port engineer in February, 1948.

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Shipping Industry Honors Commander Henry Barbieri

A rousing tribute was paid by 423 members of the San Francisco maritime fraternity at a farewell dinner party in November to Commander Henry V. Barbieri upon his retirement as officer in charge of the marine inspection service of the United States Coast Guard.

E. T. Senter, marine superintendent of the Grace Line, was master of ceremonies, and, on behalf of the guests, presented the retiring commander with a television set.

Successor to Commander Barbieri is Commander F. A. MacGurn, who will have been in the inspection service 23 years next month, first with the old Bureau of Marine Inspection and later with the Coast Guard.

Commander Barbieri has been with the inspection service since 1915. Earlier he sailed as chief on trans-Pacific ships, including the old CHINA, KOREA and SIBERIA.

On the committee arranging the farewell party were V. J. Bahorich, Pacific Far East Line; L. L. White, Coastwide Painters; William B. Warren, American Bureau of Shipping; R. E. Christy, Todd Shipyards; Al Safholm, Coastwise Line; H. P. Stewart and W. H. Quayle, Bethlehem Shipyard and Mr. Senter.



A Joe Williamson photo

NEW PRESIDENT TAKES OVER AT Seattle. Left to right: G. J. ACKERMAN, American Mail Line, retiring president, turns over ship's bell, insignia of office, to CLAUDE E. WAKEFIELD, Bogle, Bogle & Gates, incoming president, Propeller Club, Port of Seattle. Presented to the Seattle Propeller Club many years ago by Pacific Marine Supply Company, the bell has become an institution in the club's history. Other than installation of officers the affair featured a welcome to Joseph T. Hare, a send-off to William T. Hayes, of the U. S. Maritime Commission.

AT COMMANDER HENRY V. BARBIERI'S FAREWELL—Left to right: CAPTAIN H. C. PERKINS, U.S.C.G.; COMMANDER BARBIERI at the microphone, studying the picture of the television set given him as a farewell present; E. T. SENTER, Grace Line, master of ceremonies; L. L. WHITE, Coastwide Painters, and V. J. BAHORICH, Pacific Far East Lines, co-chairmen of the committee in charge; ROBERT E. CHRISTY and HENRY GELHAUS, Todd Shipyards, and JAMES R. MOORE, Moore Dry Dock Co.; COMMANDER F. A. MacGURN, successor to Commander Barbieri.

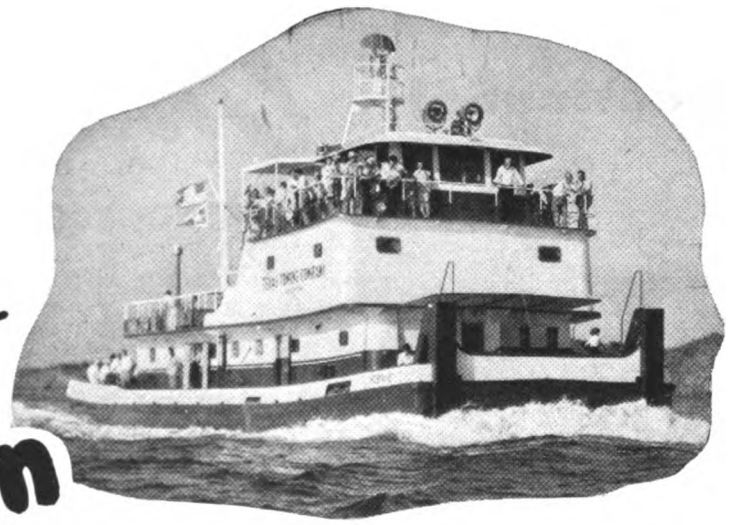


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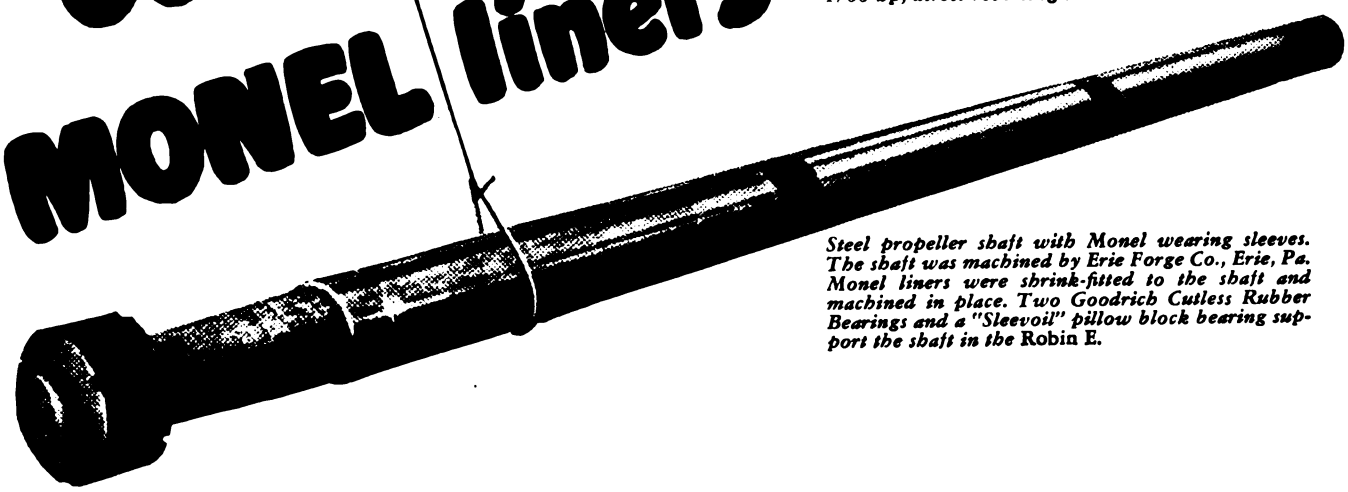


For reduced shaft wear—

Get a line on MONEL liners



The Robin E, *116-ft. river tow boat built by Gulfport Shipbuilding and Drydock Corp., Port Arthur, Texas, for The Texas Towing Company.* Robin E *is air-conditioned, carries radar and automatic pilot. She is powered by an Enterprise model DMQ 318, 1700 hp, direct-reversing Diesel.*



Steel propeller shaft with Monel wearing sleeves. The shaft was machined by Erie Forge Co., Erie, Pa. Monel liners were shrink-fitted to the shaft and machined in place. Two Goodrich Cutless Rubber Bearings and a "Sleevoil" pillow block bearing support the shaft in the Robin E.

When your boat must operate under difficult service conditions, take a tip from the builders of *Robin E* —one of the most modern river tow boats afloat.

Mr. E. W. McCarthy, Vice President of Gulfport Shipbuilding and Dry Dock Corporation, says:

"Monel* was chosen for shaft liners on the *Robin E* because of the particularly rugged service to which she will be put. This vessel will operate in river water, often sandy, and will be subjected to extreme operating conditions when maneuvering large tows. It was felt that Monel shaft liners would greatly reduce maintenance cost and increase the life of both bearings and liners."

The Erie Forge Company of Erie, Pa. made the *Robin E's* steel shaft. The liners were centrifugally cast and rough machined to 10 1/16 in. O.D. at Inco's foundry. They were supplied to Erie Forge with finished I.D., ready for shrink-fitting to the shaft and subsequent machining to size.

Centrifugally cast Monel liners combine corrosion resistance with high strength, hardness, and freedom from porosity. Monel liners are widely used in boats, dredges, and pumps where abrasion and sea-water corrosion are serious threats to bearing and shaft wearing surfaces.

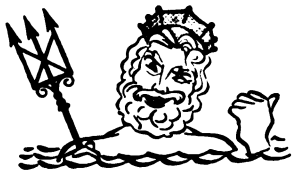
Triple Service Life Expected

Actual field service reports indicate that centrifugally cast Monel shaft sleeves can be expected to outlast other non-ferrous types by three times or more in the severest kind of marine service.

For more information about the marine applications of Monel, write to Marine Sales in care of INCO.

THE INTERNATIONAL NICKEL COMPANY, INC., *67 Wall Street, New York 5, N. Y.*

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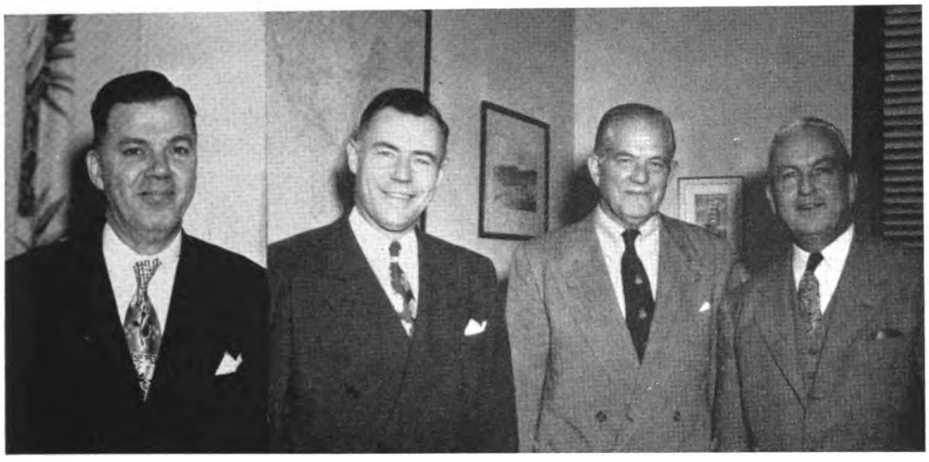


*Monel** *"... It's the SEAGOIN'* metal"*

*Reg. U. S. Pat. Off.

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SHAFT ALLEY (continued) Chatter



MOORE-McCORMACK PRESIDENT VISITS WEST COAST—Left to right: H. K. GRADY, Traffic Manager, Moore-McCormack Lines, San Francisco; C. J. GRAVESON, District Manager at Seattle; A. V. MOORE, New York, President, and K. C. TRIPP, San Francisco, Pacific Coast Manager.
Mr. Moore said it was possible Mormack would add another C-3 to its Pacific Coast-Caribbean fleet and was considering building new passenger ships. His line owns 35 ships.



MRS. SHERMAN PRESENTS A PICTURE—Left to right: PHILIP A. COXON, Moore Dry Dock Co.; PERRY PATTON, Waterman Steamship Corp.; JOSEPH A. MOORE, Moore Dry Dock; MRS. DR. MELVIN J. SHERMAN; CAPTAIN R. O. DEMAREST, Sudden & Christenson; JOS. A. MOORE, JR., Moore Dry Dock; CAPTAIN L. T. BERNARDI, master of the ss YOUNG AMERICA and NATE LEVY, formerly with Moore Dry Dock.

Waterman Ship Receives Picture of Sponsor

Because the Waterman Steamship Corporation's C-2 ss YOUNG AMERICA never was presented with a picture of its sponsor, a beautiful framed colored photograph was given to the master, Captain L. T. Bernardi at a brief ceremony held aboard at San Francisco last month by Mrs. Dr. Melvin J. Sherman, who was Miss Claire Levy when she christened the vessel.

Mrs. Sherman is the daughter of Nate Levy, now retired but for years with Moore Dry Dock Company, Oakland, which built the ship.

The YOUNG AMERICA is chartered to Sudden & Christenson and is in trans-Pacific service.

Portland, Ore. Schools Plan Maritime Affairs Course

Under joint sponsorship of the Propeller Club, Port of Portland, the Port of Portland Commission, and the superintendent of public schools of Portland, Oregon, a course in port and maritime affairs as a part of the public school curriculum in the eighth and ninth grades has been launched in that city.

The October meeting of the Portland Propeller Club was devoted to discussion of the subject. Pertinent to the objective V. D. Bain, assistant superintendent, Portland Public Schools, recorded: "When children have seen and been in ships and talked to the men who have been in foreign lands geography will never be dull. On such experiences as these can be built understanding and appreciation of other peoples of the earth and a sense of our own importance and responsibility in world affairs. The study of the port is a lead to future prosperity and peace."

⚓ ⚓ ⚓

New secretary of the Northern California Section of The Society of Naval Architects and Marine Engineers is Emmet H. Jones, supervisor of the hull drafting department of the Bethlehem Steel Co., Shipbuilding Division, San Francisco. Mr. Jones succeeds William A. Baker, also of Bethlehem, who has been transferred from San Francisco to Quincy, Mass.

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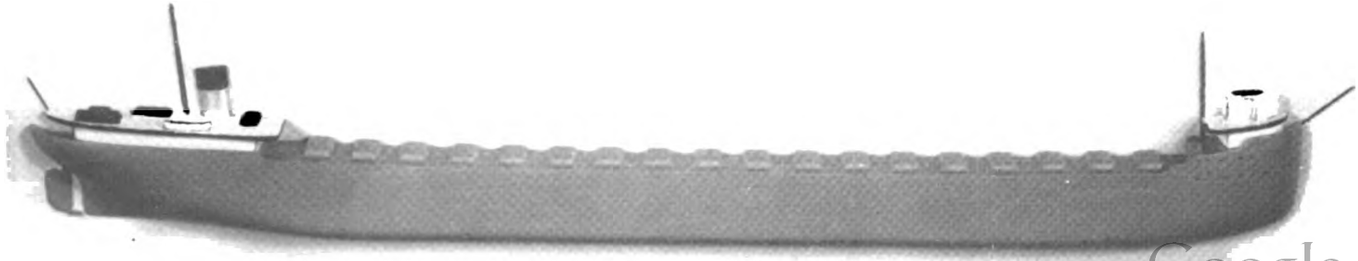
A New Type Ship Model Available

A new type of ship model is now available at low cost. Conceived, designed and produced by a graduate naval architect, the models are faithfully reproduced in three dimensions to a scale of 1/64 inch to the foot. At present, only the below pictured model of the U. S. Maritime Commission type L6-S-A1 is available, but other Maritime Commission types are soon going into production.

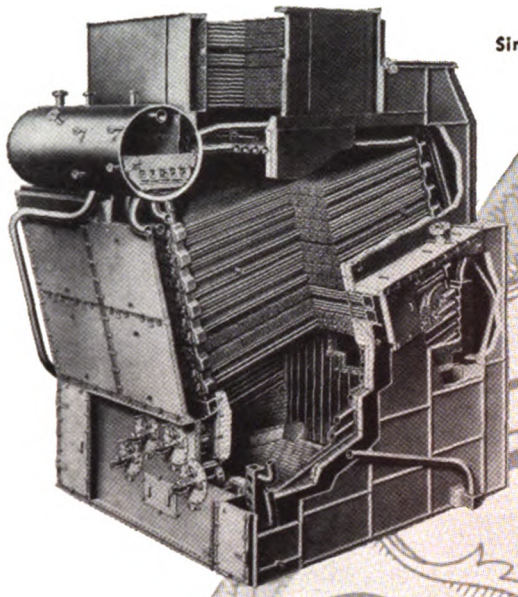
The quantity production of these copyrighted miniature models is the result of several years of experimentation. A master model is created of wood, based on the design plans of the full size ships. From this a series of rubber molds are made and each part of the plaque is then cast in plaster to exact dimensions, finished in natural color, and manually assembled. Through this casting process it is possible to market the models at a small fraction of the $150 original cost of the master model.

Available in two forms, a multi-part hand-painted design finished in natural color which retails at $5.00, and a one-piece model finished in satin aluminum which retails at $3.00, the models are made by "Gifts 'N' Gadgets," Catonsville, Maryland.

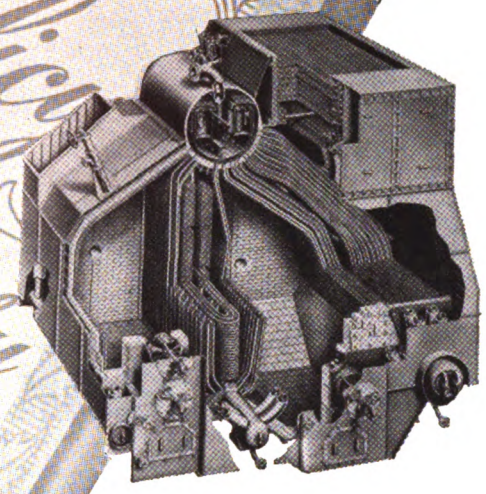
New type low cost ship model . . .



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Single-Pass, Header-Type Boiler



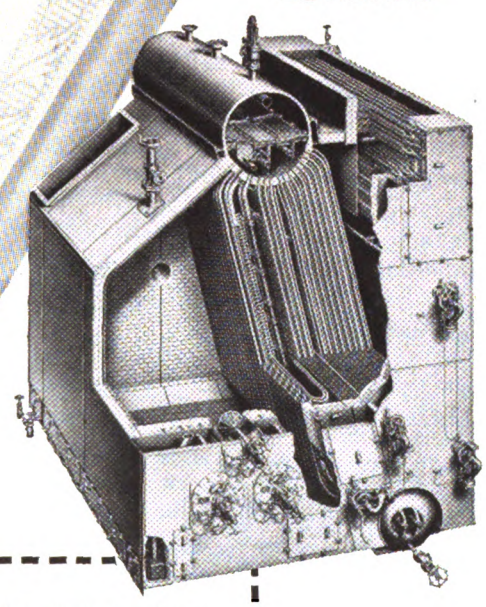
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M-260

ON THE PACIFIC COAST: C. C. MOORE & CO., 450 MISSION STREET, SAN FRANCISCO

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The *S. S. Jahra* on her delivery trials.

Supertankers for Superservice

The *S. S. Jahra,* first of twenty-four 28,000-ton supertankers ordered from Bethlehem shipbuilding yards by private interests, is an outstanding example of Bethlehem's ability to design and construct ships to meet the specific requirements of the individual operator or of an entire industry.

These vessels, all of which will be delivered by early 1951, represent fulfillment of the petroleum industry's need for big, fast, highly-efficient carriers capable of transporting oil products to and from the far-flung corners of the globe on a low-cost basis.

Fully representative of American postwar shipbuilding skill and achievement, these supertankers can be expected to provide many years of high-standard and low-cost service for their operators, because they will have all of the inherent characteristics which for almost half a century have distinguished every ship bearing the title, "Bethlehem-Built."

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Length, overall	624 ft. 9¾ in.
Length, between perpendiculars	595 ft. 0 in.
Breadth, molded	84 ft. 0 in.
Depth, molded	44 ft. 0 in.
Draft, molded	33 ft. 0 in.
Deadweight, tons	28,300
Cargo capacity, bbls	240,400
Shaft horsepower, max	13,750
Speed, fully loaded, about	16½ knots



SHIP REPAIR YARDS

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the LOG
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Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

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CASE FOR THE NORWEGIAN MERCHANT MARINE

With three million people and five million tons of shipping Norway depends heavily upon her merchant marine as a source of tax income.

By OYVIND SCOTT-HANSEN
Shipping Adviser to the Norwegian Embassy

Before the second world war broke out in 1939 Norway had a merchant fleet of 4.8 million gross tons in operation and some 650,000 tons building or contracted for. Had the war not come the tonnage would have amounted to about 5.4 million tons in 1941.

Even before Norway herself was attacked her merchant marine played an important part in supplying Britain with essential war supplies from overseas, and in April 1940 the full weight of the merchant marine was thrown into the battle for survival. No one can say what would have happened if the Norwegian vessels had not been available during the battle of Britain.

Norway lost one-half of her tonnage and was left with only 2.7 million gross tons.

From a long time back, shipping has been vital to the Norwegian national economy, in offsetting the deficit in the balance of trade. Norway could not otherwise have bought products from abroad to the extent she has done, nor could she have reached her high standard of living. So, of course, every effort was bent upon replacing the war losses as fast as possible.

We had to look to the United States for most of the shipbuilding material for this reconstruction. Critics here have argued that the allotments of steel for this purpose have been too liberal, at a time when American domestic demands could not be met, and also disapproved of payments for some of the allotments being financed with U. S. Government funds for ships that would compete with the American merchant marine. But the Marshall Plan was conceived for recovery, and to Norway recovery spells first of all, new ships.

Time and again critics have alleged that the tonnage under the Norwegian flag will exceed the prewar figures by some 67 per cent—when all contracts for new ships have been effectuated. This is not so. This year the fleet may be back to the prewar figure of tonnage afloat, and is expected to total 5.8 million gross tons in 1953. This means an increase above the prewar tonnage in operation, but is justified by a larger population, full employment and higher world prices.

Critics have pointed to an expected world-wide over-tonnage. To this, I wish to say that it is the individual ship owner who runs the risk of being forced into lay-up. That has happened before, many times, but Norwegian maritime history has shown that such risks are taken again and again, and every American will no doubt agree that this is in keeping with the private competitive system of which you are proud, and which made your country great.

Figures have been published recently tending to give the impression that the Norwegian merchant marine is being subsidized. In order to remove every vestige of doubt in this respect, I would like to explain what we subsidize—and why:

Norway has a population of only 3 million people, spread out in a rugged and mountainous country with a coastline of about 13,000 statute miles. Railroads and highways necessary to link sparsely populated areas with each other have been constructed through the years at tremendous costs, and for this reason most railroads and highways had to be built and maintained by the Government.

The same goes for the maintenance of coastal communications by water between small places in deep "fjords" and thousands of islands along the coast. The problem of keeping these services in operation is an entirely domestic one and has nothing what-so-ever to do with ocean "shipping subsidies" in the generally accepted sense of those words.

The group of small vessels carrying passengers, cargo and mail comprises about 1 per cent of the total Norwegian tonnage. Another 4 per cent consist of unsubsidized coasters and fishing vessels and again the remaining 95 per cent represent ocean going vessels, absolutely unsubsidized. Indeed, the Norwegian shipping industry contributes heavily through taxes to the balancing of the national budget.

We are proud of these figures: 3 million people and 5 million tons. This means 1.6 tons per capita. Comparably we are far ahead of anybody else; Britain 0.3 and United States 0.08. To equal the Norwegian figure the United States would need 240 million tons; active world fleet is about 60 million tons. Eighty percent of the vessels trade between foreign ports the world over. The fleet is our Empire, built up by courage and skill and I think we deserve to keep it.

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OVER THE LEE RAIL . . .

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ANNUAL PROPELLER CLUB MERCHANT MARINE CONFERENCE

The 1949 Annual Propeller Club Merchant Marine Conference, held at the Waldorf Astoria Hotel in New York October 19, 20 and 21, proved to be one of the best in the twenty-three years during which the conference has been held.

Despite the seemingly bleak outlook for the maritime industry the general tenor of the meeting struck a keynote of optimism. Speakers consistently plugged for more and better industry-government cooperation, better public relations, and increased effort to secure passage of long-pending legislation now before the Congress.

Although there were many excellent papers delivered at the three-day meeting it is impossible to publish or review them all. The following pages of The LOG are devoted to abstracts of those papers most directly treating with the operating problems of our merchant marine, and several outstanding technical papers published in full.

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Fleming Praises M.C. Reorganization

The chairman of the Maritime Commission directed his discourse to the current problems and future hope of the American Merchant Marine as they relate to the functions and responsibilities of the commission. He said the relationship is very close indeed—that it was closer than past events might have led some to believe.

"The Merchant Marine Act of 1936," he asserted, "not only set a goal for the Maritime Commission, it also gave it a number of very specific duties including the determination of programs and procedures designed to carry out the broad policy of the act; but often in the past this function has been obscured, and at times it had been neglected. The General praised the several steps that were taken recently to lighten the administrative duties of the commissioners, and added that he was asking his colleagues to focus their attention upon several major aspects of the commission's work.

"Some of these are tasks which look well into the future," General Fleming explained, "others are of more immediate concern. Taken together, I believe they constitute the major determinations which will be needed to fulfill the duties Congress has laid upon us."

Discussing the various problems of the merchant marine, General Fleming mentioned block obsolescence, and warned that the nation dare not risk a repetition of the situation that developed after World War I when we watched American-flag cargo vessels being crowded off the seas by more modern and more efficient foreign-built ships. He said, however, that the country will again face the same situation unless steps are taken to assure progressive replacement of war-built tonnage.



MAJOR GENERAL PHILIP B. FLEMING, USA (ret.)
Chairman, U. S. Maritime Commission.

General Fleming pointed out that the commission had no desire to "go it alone" in carrying out the policy-making functions—that it was glad to consult with every segment of the maritime industry, just as contact is maintained with government agencies which have related problems and common objectives. He said the commission was fully cognizant that it belonged to the family of government agencies and that its policy determinations must fit within the broad framework of national policy.

The American people are not maritime minded today—they have largely forgotten a seafaring heritage that underlies our development as a great nation, the speaker declared. Twice in the recent past this blind spot has threatened our very existence as a free people, and once again signs are evident that the old malady is growing more acute, he added.

"Overshadowed by great events here and abroad," he asserted, "the importance of the American Merchant Marine has been lost sight of to a dangerous degree. The efforts of all concerned in the maritime industry—government, management and labor—have been deeply engaged in the complex job of post-war reconversion. Too little money and effort have gone into the all-important task of showing the American people the vital part played by our maritime industry."

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Conversion of Liners to Military Transports

by

WILLIAM E. BLEWETT, JR.
Executive Vice President
Newport News Shipbuilding & Dry Dock Co.

Mr. Blewett discussed the potential conversion of liners to military transports, and gave his audience a list of the characteristics desirable to obtain the maximum degree of safety and efficiency. He said these included speed, fireproofing and protection, capacity for troops, fuel, fresh water, supplies and equipment.

The shipyard official said it becomes the yard's job to incorporate as many of these features in part or in whole into a vessel that is to be converted, in the shortest possible time. At this time, he added, there are very few passenger ships or so-called liners under the American flag which were designed to permit a conversion that would produce the optimum vital characteristics needed for a transport, and he listed high speed, length over 500 feet and at least two-compartment subdivision with corresponding damaged condition stability as mandatory fundamentals.

"A merchant vessel," the speaker asserted, "is usually designed for a specific trade and converting to a troop ship means that the vessel has to be redesigned for an entirely different trade. However, during the design stage of a passenger ship a wide choice of arrangements is possible, and accordingly if the transport arrangements are considered at that time a much more efficient conversion can later be obtained."

Mr. Blewett contended that if conversions are to be made quickly and in a manner so that the vessel will carry the maximum number of troops and equipment with the maximum of protection, it is most necessary to have the conversion

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LT. CMDR. ARTHUR M. TODE, USNR (ret.), Honorary President of the Propeller Club of the United States receiving the Distinguished Public Service Award, formally presented by REAR ADMIRAL WALTER S. DeLANEY, Commandant, Third Naval District, at the annual banquet of the Propeller Club.

design, specifications and material lists prepared before an emergency occurs. He urged that complete and detailed information for the conversion work for each vessel be made available.

The speaker conceded his subject to be academic since the United States has very few passenger vessels sailing the seas that are fit to be converted into troop carriers. He pointed out, however, that six passenger vessels are presently under construction, with the designers fully cognizant of the conversion problems, so that the industry can expect facilities incorporated in these vessels which will permit their conversion to the best of troop ships.

"What I have termed conversion problems," he declared, "resolve themselves in the completed vessel to so-called defense features, and it is exceedingly important that they should be recognized in the contract stage and in no way minimized for the purpose of economy."

Pacific Coast Views on Maritime Legislation

by

HUGH GALLAGHER
Vice President
Matson Navigation Company

Mr. Gallagher's speech discussed the Pacific Coast viewpoint with regard to maritime legislation. He claimed the West Coast men were at a great disadvantage because of the dispersal of maritime industry on that coast and because of its distance from Washington. He added that the industry is cognizant of its difficulties and is making efforts to eliminate them.

The speaker deplored that the factor of distance has proven such a handicap and pointed out that there is too little contact between West Coast industry leaders with a resultant lack of opportunity to discuss and understand the other fellow's viewpoint.

He said West Coast leaders favored the long-range program now being considered by Congress and were giving their support to the fight to reduce Panama Canal Tolls. He added that they also favor the retention of the Taft-Hartley Law because they believe it to be fair to both management and labor.

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Maritime Commission's New Promotion Program

by

HON. JOSEPH K. CARSON
Commissioner
U. S. Maritime Commission

Mr. Carson insisted there is real justification for the proposed Merchant Marine promotion program and asserted that President Truman desires that such a program be undertaken. He declared, in addition, that the maritime industry, la-

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HUGH GALLAGHER, Vice President, Matson Navigation Company

bor and veteran organizations are behind the idea, and added that history starkly reveals the necessity of a merchant marine worthy of the strength and dignity of the United States.

He cited the needs of the maritime commission and asserted that while its reorganization is being speedily accomplished, its promotional campaign has yet to be made fully effective.

The speaker traced the background of the program from its suggestion in March up to August when the president declared that an adequate appreciation of the importance of the merchant marine to the nation is lacking and is much needed today.

Mr. Carson said the maritime commission has a statutory obligation under the Merchant Marine Act of 1936 to foster and encourage the development and maintenance of a strong merchant marine, and he added that an intelligently planned and efficiently executed public relations program would assist toward this end.

"Congress has foreseen the need for a promotion program for the American Merchant Marine and wisely clothed the commission with general authority to pursue that aim," Mr. Carson declared. "It needs only now to appropriate the necessary funds to make effective the exercise of the power conferred."

The speaker deplored the fact that the American public is not maritime minded, and struck at the people who fail to realize that but for shipping their communities would be on the economic toboggan. He said that in our eagerness to develop our own natural resources we have failed to realize that on our forward economic march we have found need for certain things in great quantity which must come to our shores in ships from other parts of the world. He said the only guarantee of this continuous flow is an American merchant fleet.

He offered as one reason for the lack of a promotional program by the Maritime industry the fact no such activity by private industry could succeed unless it was coordinated with the agencies of government concerned with maritime affairs.

Mr. Carson listed four basic premises which he said were fundamental to a successful program-active support and participation of maritime management, the tapping of the ablest talent in the media field for guidance, the authority for the commission to go outside of government to contract for the development and execution of those phases of the program where such a course is indicated, and the setting up of an administrative staff specifically identified for the promotional work.

He said the development of the specifics of the program would call for the problem to be studied with the help of an industry advisory committee, details to be worked out by the commission's staff with the aid of technical specialists, contact to be maintained with all interested organizations, and continuance of the program to be assured through maintenance of the production, distribution and contact work by a commission staff.



HON. JOSEPH K. CARSON, Commissioner, U. S. Maritime Commission

Chart for Steamship Passenger Promotion

by

EUGENE F. HOFFMAN
Director of Public Relations
American President Lines

Mr. Hoffman opened his address with an assertion that he remained optimistic —based on personal experience and observation—with regard to the threat of air penetration into steamship passenger traffic. The speaker said the big steamship companies have learned about the air age the hard way, and added that some still do not believe the airplane is here to stay.

Continuance of such attitudes, he said, can do only harm to the maritime industry and retard development of the great new opportunities for promoting surface travel that have come to us through collaboration with the air transport industry. He added that after a second look at the monster from the skies it was found to be not half so terrifying as first believed.

Instead of a direct all or nothing attitude Mr. Hoffman recommended that the steamship companies seek to interest new travelers in moving one way by air and one way by ship. He declared that half a loaf was better where no loaf existed before, and urged the selling of luxury life aboard ships.

"I am convinced," Mr. Hoffman declared, "we shall be able to meet this new competition, and meet it successfully; if we are willing to face up to the realities inherent in the new competition."

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Radar Navigation and Rules of the Road

by

ROBERT S. ERSKINE
Kirlin, Campbell,
Hickox & Keating

Radar was hailed as a sure means to end all marine disasters in darkness, fog and thick weather, Mr. Erskine said, but practical experience seems to indicate that the first promise was over-optimistic. He added, however, that radar still appears to hold the possibility of making good that first promise, subject only to the human equation involved in its use.

In its present stage of development, he said, a vessel's radar cannot automatically avert disaster, it is the means of piercing the darkness, fog or bad weather so that a navigator can act upon the information received. He added that conflicting opinions have hampered the re-

GENE HOFFMAN, Director of Public Relations, American President Lines



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ROBERT S. ERSKINE, Kirlin, Campbell, Hickox & Keating

liance of radar and possession of it in no way relieves the master of a ship from his obligation strictly to observe the requirements laid down in international regulations.

Mr. Erskine said that because of human nature it is probable that radar collisions will continue, but he expressed the opinion that they would be lessened greatly, if not eliminated, by official answers in such a form that navigators no longer would be confronted with the present uncertainties. He suggested that there must be, in this enlightened age, a speedier and more efficient means of dealing with the problem rather than by trial and error in the courts.

He declared that the problem of radar operation is sufficiently important to warrant a call for another International Conference in the near future in the search for a proper solution.

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Master's Responsibility To Passengers

by

COMO. ROBERT C. LEE, USNR
Executive Vice President
Moore-McCormack Lines

The Moore-McCormack Lines official took issue with the tendency to change the old slogan of Wooden Ships and Iron Men to Wooden Men and Iron Ships. His address directed attention to the vast changes in every other type of businessman over the past few decades, and claimed the shipmaster of today is only superficially different from the man who took his vessel to sea in the early days of this nation.

"The passenger ship as we know it today is a modern community," Mr. Lee stated, "virtually a little city afloat. It represents an investment of many millions of dollars. It is a complicated mechanism. The people whom it serves represent all classes of society, with a hundred different backgrounds, and personal tastes as different one from the other as the moon from the sun. The man who commands it must be many men."

The speaker said the responsibility of the master with respect to a competently-manned ship cannot be exaggerated. It starts at the bottom and comes right through to the top of his staff, for the master must delegate much of his work, he added.

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Industry Cooperation With the Government

by

S. DUVALL SCHELL
Vice President
National Federation of American Shipping

The Munitions Board of the National Military Establishment has recently called upon this industry to organize a Stevedoring Advisory Committee. The National Security Act of 1947, (Public Law 253—80th Congress) established the Munitions Board as one of the highest planning organizations of our Government in providing for our national defense and security. One of the main duties of the Munitions Board is in respect to the support of strategic and logistic plans of the Joint Chiefs of Staff, and in respect to industrial preparedness and mobilization, including procurement, production, and distribution. Of paramount importance is industrial mobilization. This involves most comprehensive preliminary plans and estimates of the potentials of our whole nation. The Munitions Board has recognized the great importance of stevedoring in this governmental undertaking, and as related to our whole economic structure.



COMMODORE ROBERT C. LEE, USNR, Executive Vice President Moore-McCormack Lines

I am glad to have this opportunity to make the first public announcement to you of the industry of the recent formation of this Stevedoring Advisory Committee. Our Committee is a segment of the Industry Advisory Committee on Packaging, Storage and Materials Handling.

Your Committee has been advised that the Munitions Board now has under consideration the "standardization of stevedoring contracts." It is contemplated that the Munitions Board will submit to your Committee for study and comments the developments and proposals prepared by the staff of the Munitions Board. Moreover, the members of your industry Committee have advised the Munitions Board that they are available for consultation by representatives of the Government Departments in matters relating to the stevedoring industry. Your industry will have the opportunity to render valuable assistance to the Government, and at the same time keep currently informed of plans being developed by the Government for emergency use.

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Methods for Preventing Accidents in Shipyards

by

I. C. YATES
Director of Safety
Alabama Dry Dock & Shipbldg. Co.

The speaker explained that difficulties which continue to arise today in accident prevention are in the failure to recognize the human element involved in the unplanned event. We are inclined to look only toward the mechanical failure rather than toward human failure, he added.

He listed three major accident causes as the lack of training, improper or poor supervision and habit.

Mr. Yates said the accident prevention program is not designed to be a profit making institution, but rather as a means

S. DUVALL SCHELL, Vice President, National Federation of American Shipping



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LOUIS B. PATE, National President of the Propeller Club and Vice President, Seas Shipping Company.

of preservation of that which has or can be accomplished through production efforts. The very existence of many establishments are dependent upon so-called small items, such as discounts and interest, he continued, and asserted that losses due to accidents cannot very well be discounted and the interest collected on the price paid may mean the difference in its very existence.

The enforcement of safety rules, Mr. Yates declared, is essential in some respects, and we are obliged to set up certain rules and regulations and to adopt certain policies regarding operational procedure, but, he said, in accident prevention this should be used only as the last resort. The leadership in organized accident prevention work will overcome any need for enforcement by a great majority, he added.

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Customers Must Be Served

by

A. E. KING
Vice President
Isthmian Steamship Company

It was Mr. King's contention that International Trade must be the keystone for a sound, successful American Merchant Marine. The speaker confined himself to an informal review of conditions and reactions among our overseas customers and clientele as he observed them during a recent round-the-world trade-building and inspection trip.

Mr. King said that in all areas he visited the paramount questions related to currency problems were the already existant world-wide shortage of dollar exchange and the devaluation of sterling and other currencies tied to, or associated with it. He asserted that the present effect of devaluation with regard to international trade appeared to be unfavorable to the U. S., and added that this effect must inevitably be passed on to the nation's merchant fleet.

He declared that the fundamental issue arises from the fact that whatever dollar exchange most other countries had has been spent or overspent in purchasing goods and services from the United States, and that they are now faced with existing dollar deficits which promise to become larger.

"It must be evident that areas which want to be customers of the United States, and which are in position to furnish the United States with such vast quantities of materials which this country either actually needs or can advantageously use should not be placed in the category of gift-seekers," Mr. King said. "These countries are customers, good customers now and potentially much better custom-



L. S. SPARRELL, President, Propeller Club Port of New York, and Manager of Ship Repair Sales, Bethlehem Steel Company, Shipbuilding Division.

ers. It is incumbent upon every segment of the American business community to recognize this vital fact and adopt it in our overseas dealings."

The speaker reminded the panel that it is important to recognize and remember that there is a strong desire in overseas areas to make progress not only in the field of production of raw materials or semi-finished goods, but to achieve some measure of industrialization as well. He said such efforts are especially noticeable in the Philippines, India, Ceylon, Pakistan and Indonesia.

Mr. King said each and every one of the countries he visited held much promise for the long range future of American trade provided it is developed by us along sound lines, and provided we Americans realize our foreign customers must be served and apply ourselves to that task with the same thoughtfulness and vigor customarily shown by Americans in achieving desired objectives.

The speaker mentioned that personal contacts with diplomatic and commercial representatives of this country that he met on the trip seemed to be well informed and anxious to cooperate. He said this attitude was a very hopeful outlook inasmuch as the success of our future efforts for the advancement of International trade will certainly require the cooperation of government with the business community.

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European Diesels in Cargo Vessels

by

POUL A. CHRISTENSEN
President
Burmeister & Wain
American Corp.

The development and application of mechanized propulsion for ships has necessitated a change of customary thinking with regard to power units and the means of transmitting this power to speed, according to Mr. Christensen, who noted that diesel engines are used to a large extent in all the European countries that depend to such a large degree on ships for their national income.

In short, he asserted, the European shipowner is very much of an individualist who requests a special type of ship which his experience tells him is ideal for his trade, and preferably of a design typical for his company. Mr. Christensen credits the European vessel owner with constant alertness to new developments in the diesel engine industry.

He said the motor cargo liner around which centers the most interest today in Europe appears to be a ship of approximately 9,000 to 9,500 deadweight tons with a single screw installation of approximately 6,600 brake horsepower, giving the ship a speed of about 16 knots.

A few cargo liners of about 9,000 tons

J. LEWIS LUCKENBACH, Chairman, American Merchant Marine Conference Committee and President, American Bureau of Shipping.



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E. A. SCHLESINGER, President, Propeller Club Port of New Orleans and Executive Vice President, Gulf Engineering Company; WILLIAM MASSIMINI, Gulf Engineering Company, New Orleans, and HARRY X. KELLY, Executive Vice President, Mississippi Shipping Company.



MAJOR GENERAL ROBERT H. WYLIE, USA (ret.), Manager, Port of San Francisco.

deadweight have been completed, he added, and were designed for the high speed of 19½ knots.

Mr. Christensen concluded with a 1912 quote of Winston Churchill, then First Lord of the Admiralty, who said in discussing diesel engines, "This venture will form an epoch in the development of shipping. This new type of vessel is the most perfect maritime masterpiece of the century."

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Diesel Engines in The U. S. Navy

by

CAPT. F. C. L. DETTMANN, USN
Head of Diesel Division
Bureau of Ships

The speaker traced the increased use of diesels by the U. S. Navy and asserted that the high percentage of diesels in subs is a lead to the Navy's interest in this type of power. Capt. Dettmann added that the huge amount of diesel horsepower installed by the Navy during World War II was "earned" by the diesel engine on its own merit.

Reliability is the foremost requirement in the Navy for a power source, said he. All our peacetime efforts are to this end and no installation is satisfactory until we have achieved it.

He pointed out that when this country entered the last war we had frozen our design on four identical engines in a straight diesel electric drive, but he said that of all the diesel uses of the Navy the most distinguished service rendered by such engines was to landing craft.

Some of the Captain's predictions for future diesel power in the Navy were—use of diesel propulsion in all combatant ships up to destroyers; most auxiliary vessels to be diesel driven, and diesel electric drive used in the larger of our diesel driven ships, subject to combat duty.

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Diesel Engines on The Great Lakes

by

L. A. BAIER
Head of Naval Architecture & Marine Engineering
University of Michigan

Mr. Baier explained that he was discussing diesel propulsion power strictly from the viewpoint of a naval architect, who, he said, is a buffer or screen between shipowner and salesman. He quoted construction figures on the various types of marine power in this country, and said approximately 16% of new merchant propulsion power is composed of diesel units.

The speaker asserted that tremendous impetus had been given marine diesel production during the war, but he said the domestic totals were insignificant compared to European figures.

Mr. Baier suggested that the Great Lakes represented a highly potential market for the diesel engine builders that has been largely untouched.

NEWLY ELECTED OFFICERS of the Women's National American Merchant Marine Organization: left to right; MRS. BENN BARBER, President; MRS. RAYMOND E. DANIELS, Secretary; MRS. B. C. EDWARDS, National First Vice President for Atlantic Coast; MRS. ARTHUR M. TODE, Hon. National President; MRS. GENE HOFFMAN, National Treasurer.



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ECONOMICAL DEVELOPMENTS ON THE C1 DIESEL CARGO SHIPS

By STANLEY M. LECOURT
Research Engineer
Mississippi Shipping Co.

One year ago I appeared before the "Diesel Engine Panel" of the American Merchant Marine Conference and spoke of the operation of Diesel powered vessels in the deep sea cargo trade.

My presence here again today has the propensity of placing me in the category of a professional lecturer employed to assist the salesmen peddling Diesel engines, but I can assure you that is not the case. I suspect that the reason for my being invited for a repeat performance is due to the fact that I am a part of the engineering department of the only major American Flag operator of cargo vessels in foreign trade that has stuck its neck out in giving the Diesel engine a fair trial. And, after two and a half years of operating Diesel cargo ships, we are still trying.

With respect to this latter statement you may be interested in knowing, if it has not already been brought to your attention, that bids were opened last month by the United States Maritime Commission for a luxury type passenger liner of approximately 23,000 tons displacement to be built for the Mississippi Shipping Company, which if constructed, and we hope nothing stands in its way, will be powered with Diesel engines.

The underlying subject of my paper last year was the economic value of the Diesel ship as compared to a steamer of the same size and horsepower operating in the same trade.

In the comparison of the two types of vessels it was stated that one of the Diesel ships had been fitted with a new propeller which during the first voyage gave indications of a reduction in fuel consumption. When invited to speak here today I was requested to elaborate on that statement.

At the time the C1 Diesel vessels were first placed in operation by the Mississippi Shipping Company we learned that the Navy had modified the propellers on their C1's by cutting 7½ inches off the blade tips. The original propellers had a diameter of 17'-0" and a pitch of 18'-4¼". The reports of the results obtained with the modified diameter of 15'-9" were not too informative. In order to satisfy ourselves as to the merits of the reduced diameter we performed a similar operation on a propeller on one of our own C1's. The results obtained were not encouraging.

Shortly after this experiment was agreed upon, approval was also given to try an entirely new propeller. One of the several designs was selected as the most promising and subsequently installed on the M. V. DEL VIENTO. This new propeller has a diameter of 16'-8" and a pitch of 16'-9".



STANLEY M. LECOURT, Research Engineer, Mississippi Shipping Company.

From the log books of vessels with the original wheel the following averages were obtained:

Propeller RPM	82.5	
Speed by the propeller	14.9	Knots
Observed speed of vessel ..	13.98	Knots
Engine exhaust temperatures	530.	Degrees
Fuel consumption	0.340	Barrels per mile

With the new propeller installed, the M. V. DEL VIENTO's log books displayed the following:

Propeller RPM	89.4	
—An increase of 6.9 RPM		
Speed by the propeller	14.8	Knots
—for practical purposes the same as for the old propeller		
Observed speed of vessel ..	14.39	Knots
—A slight but negligible increase		
Engine exhaust temperatures	460.	Degrees
—A reduction of 60 degrees		
Fuel consumption	0.320	Barrels per mile
—A reduction of 0.02 barrels per mile		

This reduction in fuel consumption amounts to a total of 1,200 barrels per year per ship. At the present price of Diesel fuel this represents a saving of $4,020.00 per ship. It will normally take about 2½ years of fuel savings to pay for the new propellers. The value of the reduction in wear and tear on the engines and, subsequently, lower maintenance cost is very important but unfortunately it cannot be stated in dollars.

In January of this year an order was placed for four more new propellers to complete the change over.

Last year when the data were compiled for the comparison it was found that the lubricating bill for one year for each Diesel ship averaged $3,248.00 or $8.90 per day. The C1A Diesels as originally built were equipped with centrifuges as the sole means of lube oil treatment.

During a conversion lay-up period in the first quarter of this year each of the motor vessels was equipped with a lube oil filter using chemically treated waste type filter elements. The filter was installed in the line with a by-pass added around the centrifuge.

When starting "cold" the centrifuge is placed in operation for the first eight hours to remove moisture from condensation within the crank case. Thereafter, the centrifuge is cut in for about four hours every day.

The filter elements are good for 700 hours or about 75 per cent of the running time for an 80 day voyage, at a cost of $51.50 per charge. Taking into account the cost of filter elements we have reduced the lube oil bill by $1,392.00 per ship or 43 per cent. The actual reduction in lube oil consumption is 51 per cent.

This simple improvement was completed at a cost of only $1,780.00 per ship.

The American Bureau of Shipping classification rules require a special periodical survey to be completed every four years after the vessel is first certificated. I need not reiterate the detail requirements of these special surveys, which I am sure are familiar to most of you.

Three of the five Delta Line Diesels had their No. 1 special survey completed prior to the time they were first placed in operation early in 1947. The other two of the group passed through their No. 1 surveys just recently, both having been built in 1944.

One of the latter surveys was conducted during an "idle status" period on a conversion job. The regular crew was relieved for vacation during this period by licensed engineers supplied from the union "hiring hall." One of the assistant port engineers regularly assigned to the Diesels supervised the work in connection with the survey. The total amount of the wages paid to the substitute crew on the survey was $1,600.00. It must be noted that in addition to the two main propulsion engines and two generator sets all other engine room auxiliaries and deck machinery are included in the work done in conducting the No. 1 special survey. After completion of the survey a total of only $600.00 in parts were replaced in the four Diesel units.

An even more interesting case is that of the second ship which completed its No. 1 special survey last year. The special survey was conducted and completed in a period of 150 days, which was the duration of two voyages.

All of the work was performed during regular port stays using none but the regular engine room crew. This survey was carried to completion without additional cost except for the usual American Bu-

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MEMBERS of the Diesel Engine Panel were, left to right: A. W. McKINNEY, Executive Vice President, National Supply Company; RICHMOND K. KELLY, Vice President, Tide Water Associated Oil Company; OTTO H. FISCHER, President, Union Diesel Engine Company; G. W. CODRINGTON, Vice President, General Motors Corporation, Cleveland Diesel Engine Division; WILLIAM A. BUTTS, President, Enterprise Engine Company; GORDON LEFEBVRE, President, Cooper-Bessemer Corporation; LISLE F. SMALL, Executive Engineer, Lima-Hamilton Corporation.

reau of Shipping survey fees. When this particular No. 1 special survey was wound up there were no recommendations made for major repairs or replacements.

I have discussed three factors which seriously affect the total cost of operating Diesel powered vessels. The actual reductions achieved in the fuel and lube oil consumptions and the unestimated savings in maintenance cost were the results of a little effort and some spending of money, which most companies hesitate to do.

The C1 Diesels were good ships even though they were put together in a hurry. We now think better of them with the few improvements made.

Can it not be said that perhaps there are more improvements which can be accomplished?

We are still trying!

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EXPERIENCE OPERATING DIESEL TANKERS

By R. K. KELLY
Vice President
Tide Water Associated Oil Co.

The ms FLYING A was the last ship to be designed and constructed primarily to our specifications and requirements. Other ships have since been added to our small fleet but they were Maritime Commission built vessels and purchased second hand by Tide Water Associated. Before going further I wish to state that when the small fleet is referred to, I mean those vessels of the coastwise and inland water fleet which are used primarily to haul refined products from our refinery to the water-served bulk stations, and when the large fleet is mentioned, the reference is to ocean-going tankers, most of which are of the T2 design, with high pressure steam turbines and electric generators and motors. Also in this talk I refer only to the fleet of the Eastern Division of this company.

The FLYING A is a twin screw twin rudder type of ship equipped with two De La Vergne or Baldwin type reversible engines, with a carrying capacity of approximately 18,500 barrels. She was delivered to us in August 1941 and on December 17th of the same year, with Pearl Harbor only ten days behind us, the vessel was requisitioned by the War Shipping Administration, turned over to the U. S. Navy, operated in the Pacific and Southwest Pacific during the entire war, and returned to us early in 1946. While in Naval service the vessel was known as the USS KALOLI.



RICHMOND K. KELLY, Vice President, Tide Water Associated Oil Company.

Our experience in operating diesel tankers was gained mostly in vessels of the small fleet which at the present time comprises seven small tankers. All except one are Diesel propelled. The oldest vessel, the ss VEEDOL, is a reciprocating steam job, almost old enough to be classed with the tank schooner AMELIA G. IRELAND, which was purchased by Tide Water in 1890 and lost in a wreck off Gay Head, Massachusetts in November 1898. The newest vessel in the small fleet from the viewpoint of construction date is the ms TYDOL FLYING A, built and delivered by Todd Houston Shipbuilding Corp. in Houston, Texas on October 25, 1945, but the newest from the viewpoint of the acquisition date by Tide Water Associated is the ms TYCOL, constructed by East Coast Shipyards at Bayonne, N. J. and delivered on December 18, 1944 but purchased by Tide Water Associated on December 7, 1948.

In addition to that experience with small vessel Diesels, this company owns two Sun Doxford tankers constructed in 1930, but several years ago these vessels were transferred to the operation of this company on the Pacific Coast.

These various Diesel tankers are powered by direct Diesel drive, Diesel electric drive, and Diesel engines with reduction gears. There are both two cycle and four cycle Diesel engines to be found. It may properly be deduced, therefore, that Tide Water Associated is not partial to any particular company's make of engine. You will find in our vessels Winton, De La Vergne (Baldwin), Fairbanks-Morse, Nordberg and others. So long as the proposed machinery was of Diesel design, available at a low competitive price, and in full compliance with specifications, any make of Diesel was acceptable.

One reason for choosing Diesel engines for vessels in the small fleet was the safety factor involved in operating in the vicinity of the piers and waterfront of the Bayonne refinery, whose regulations require, and rightly so, that no open fires be permitted aboard vessels while loading certain petroleum products. A spark from the smoke-stack, or from another source, might cause a serious fire with tragic resultant loss of life or important property or both. With that hazard uppermost in mind, we have concentrated on Diesel power for our small vessels, which move constantly in and about the dock section of the refinery at Bayonne, N. J.

Other reasons for employing Diesel vessels in the small fleet, although somewhat obvious, will be referred to briefly. Notwithstanding the strict requirements referred to above, which rule out open fires while vessels are loading gasoline, it is possible with Diesel engines to load a vessel at Bayonne and yet have auxiliary Diesel electric power available for heating crew's quarters in the winter time, and also for the preparation of meals. Both of those items are important from the viewpoint of personnel. Another factor is that Diesel engines permit employment of smaller engine room crews, particularly a fewer number of trained personnel. In addition, Diesel engines give highly satisfactory fuel economy and thus low operating expense for fuel oil, as well as wages. It is also our experience that engine rooms on Diesel vessels are particularly cool, and relatively easy to keep clean, which tends to produce better living and working

(Continued on Page 46)

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MARINE ENGINEERING PANEL OF THE

PORT ENGINEERS

For the third consecutive year the Society of Marine Port Engineers, New York, N. Y., Inc., conducted the "Marine Engineering" panel at the Annual Propeller Club Convention at the Waldorf Astoria.

Under the chairmanship of Commander B. C. Edwards, USNR, past president of the Society and general superintendent of Agwi Lines, Inc., and the co-chairmanship of William Richards, secretary-treasurer, Society of Marine Port Engineers and vice president of The Dampney Corporation, the panel sponsored four outstanding papers on marine engineering.

The papers and their authors were: *"Modern Marine Electric Combustion Control"* by Cyril J. King, president, and B. L. Johnson, vice president and chief engineer, General Regulator Corporation; *"Notes on Design and Operational Improvement in Marine Turbine Lubricating Systems"* by Captain A. C. Lanteri, USNR, chief engineer, Marine Sales Division, The Texas Company; *"Postwar Development in Marine Refrigeration"* by William L. Masin, engineer, Marine Department, Carrier Corporation; and *"Modern Marine Steam Turbines"* by Harold W. Semar, Marine Turbine Engineering Department, Westinghouse Electric Corporation.

These papers are published in full by The LOG because of their practical application to marine operations. Mr. Lanteri's paper appeared in the November issue of The LOG, and Mr. Masin's paper, because of its large scope, is being published in two sections, the second to appear in the January LOG.

The Society of Marine Port Engineers, New York, N. Y., Inc. has been active in its endeavor to improve the dissemination of ideas and foster research into the many aspects of practical ship operation and engineering. The "Marine Engineering Panel" is only one of its activities in this direction. Monthly meetings of the Society feature a guest speaker to discuss current problems facing port engineers. These discussions range from labor difficulties to technological improvements in marine engineering.

To promote interest among your engineers in the industry, The Society offers prizes to the outstanding engineering graduate of the U. S. Merchant Marine Academy at Kings Point and the New York Maritime College at Fort Schuyler.

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MODERN MARINE ELECTRIC COMBUSTION CONTROL

By C. J. KING
President
General Regulator Corporation

Many of the most fascinating and important developments of this electronic age relate to regulation and control.

The delegation to a mechanism of man's ability to sense changes in conditions and to endow a mechanism with the ability to control the changes, of its own initiative, is an inspiring example of electrical and mechanical responsibility. These facts justify our belief that man-made controls are more accurate, more dependable, and certainly more stable, than most men.

The accelerated evolution of wartime electronic mechanisms has done much to justify our hope that these improved devices will go far toward bettering our lives during peacetime pursuits.

The proven dependability of the all-electric type of combustion control systems is largely due to the nature of the individual regulating unit which employs features of reliability particularly suited to naval and merchant ship service where safety and rapid maneuverability are so essential.

The primary object of a marine combustion control system is to maintain uniformly constant steam pressure, at the superheater header outlet, regardless of the extent or rate of steam load demand.

To accomplish this effectively the heat input to the boilers must at all times be proportional to the main turbine and auxiliary load.

A modern marine combustion control system should also be capable of handling sudden and radical changes in load independent of manual supervision. During such load changes the proportioning of fuel and air must be maintained accurately from moment to moment, so that the furnace efficiency is held constant with clean-burning fires and no generation of smoke.

These general requisites are to be discussed in more detail in the following order, which is a summary index to this paper:

1. Boiler Steam Load
   a. Electric generation and auxiliaries
2. Response of Boilers to Load Changes
   a. Parallel or equal distribution of heat to furnaces
   b. Changes in air flow
   c. Changes in fuel supply
   d. Changes in furnace draft (Coal-fired)
   (e) Control of smoke
3. Basic Operations
   a. Automatic
   b. Semi-automatic
   c. Manual
4. Basic Functions of Regulators
   a. Sensitivity
   b. Stability
   c. Speed
   d. Power
5. Control Reliability
   a. Simplicity of design
   b. Ruggedness of Power units
   c. Speed and ease of change from automatic to manual control
   d. Design comprehensibility

1. The boiler steam load on most commercial ships is divided in two classes—(a) the base load consisting of electric generation for standby services, auxiliaries, lighting and heating. This load is fairly constant and represents the minimum end of the boiler control range. (b) The propulsion load is superimposed

C. J. KING, President, General Regulator Corp.



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on the base load and should be shared equally between the total number of boilers in use. Regardless of whether coal or oil is fired, the control operation must function smoothly and accurately throughout the propulsion load ranges maintaining uniformly constant steam pressure without manual operation, other than changing burners, as the load demand requires.

Adjusting Total Heat Input

To a single master steam pressure regulator is assigned the task of adjusting the total heat input to the boiler or boilers so that the above requirements may be obtained. This regulator directly operates the automatic fuel oil valves and, at the same time, loads the air volume regulators to give a proportional quantity of air.

The importance of stable operation in this master regulator can not be overemphasized as it must be fully compensated for the relatively long time lag due to the thermal delay in the generation of steam from heat input. Moreover, the type of stabilizer used must be such as not to interfere with the regulator's sensitivity and speed of response when sudden load changes occur.

2. The response rate of the boilers to load changes is, to a large extent, dependent upon the boiler design, furnace design, forced draft fan drive, and type of burner equipment, but, regardless of these variables, the combustion control should be designed so that the heat input to the furnaces is, at all times, equally proportioned to each boiler.

Likewise the control of the air and fuel supply, which is total heat input, should be made simultaneously and on a volumetric basis.

To accomplish this the total air flow to each furnace is regulated on a differential pressure basis taking the pressure drop across the registers, that is, from the windbox to the furnace, as the index to the quantity of air supplied.

Air Volume Regulators

A separate electrically-operated air volume regulator is employed for each boiler to control the air flow. These regulators receive their loading force from the master steam pressure regulator simultaneously, and the loading force thus applied to the regulator's primary control element determines the quantity of air delivered. These functions will be more clearly understood when we refer to the diagrams to be shown later.

Within the past several years quite a large number of coal fired boilers have been installed on ore carrying vessels operating on the Great Lakes. The spreader type of stoker has been used extensively on these ships. This type of stoker has proven very dependable and its flexibility of operation makes the application of electric control very simple. However, these boilers are frequently installed with both forced and induced draft fans, which arrangement requires the use of a separate furnace draft regulator for each boiler.

These regulators operate independently of the master control system and maintain uniformly constant furnace draft at all boiler loads.

Smokeless operation of these ships when maneuvering through rivers, locks, etc., is equally as important as on oil-fired vessels, and accurate control of the fuel-air ratio not only gives high efficiency but also assures close control of the conditions causing smoke.

Basic Operations

3. Full automatic control is a term applied to the complete regulation of constant steam pressure by controlling the quantities of fuel and air and their automatic proportionality.

As applied to the conventional two-boiler, oil-fired tanker this term means that the master steam pressure regulator, the two air volume regulators, and the two automatic oil volume regulating valves are all in use. Now, semi-automatic control refers to the manual adjustment of the master steam pressure regulator by the fireman who sets the regulator by hand for more or less total heat input, thus leaving the air and oil control on automatic.

With the all-electric controls there are two types of manual operation available; namely, push button operation of the regulator's individual power unit called Remote Manual Control, and Strictly Manual Operation of the power units' handwheel and disengaging manual control mechanism. The latter operation gives the fireman positive mechanical hand control of the air dampers and oil valves at all times.

Basic Functions of Regulators

4. Sensitivity in the master steam pressure regulator and air volume regulators is of first importance because, if load changes are to be met properly, the control must respond before the pressure departure varies appreciably. Also, it is extremely important that the air volume regulator's order of accuracy be high due to the small pressures involved and the wide range of control required.

Electrically-operated air flow regulators do not require large diaphragms as the force needed to make the initial primary contacts is extremely light since these primary contacts only operate the grid bias on beam power amplifier tubes.

Thus, weight, size and inertia are reduced to a minimum, resulting in less time lag in the primary elements and an order of sensitivity rarely found in the mechanical types of control.

However, extreme sensitivity would be of no value if it could not be combined with a high order of stability. The inertia type of stabilizer meets this need as it is practically frictionless, fully adjustable to the time response of any system, and, once set for the proper release rate or reset time, maintains its setting without further adjustment.

With this type of stabilizer no interrupters or timers are required, thus giving a regulator response always proportional to the size of the load change and a continuous movement of the regulator's power arm until the required control position is reached, whether this movement be short or long. Thus the maximum design speed of the regulator is always available for large and sudden load changes.

The power requirements for the average marine regulator are on the order of one hundred foot pounds, which is obtained with a one-eighth horsepower motor driving through a totally-enclosed double worm gear reducer.

Most tanker and freighter installations require only three such units per ship, and, when one considers that these motors operate only when a change in load is required, the operating economy of electric control systems will be quite obvious —even startling.

Control Reliability

5. The regulators' primary element, electronic relays, inertia stabilizer and limit switches are all enclosed in a tightly sealed metal case with hinged cover made dust-tight by tubular rubber gaskets. This construction permits easy inspection of every control function while the regulators are in full automatic operation.

Each regulator has its own individual motor, gear reducer, and hand control mechanism. The motors are of the totally-enclosed type with marine insulation, provided with enclosed magnetic brakes for ac operation, and with dynamic braking when dc is supplied. The gear reducers are totally-enclosed with all bearings of the ball or roller type running in transmission lubricant. This staunch construction provides full protection and long, trouble-free life.

One of the outstanding features of these power units is the ease and speed with which the operator can change from automatic to manual control or vice versa. It is not necessary to pull pins or adjust linkage to make the transfer either way. To accomplish this operation the regulator power switch is thrown off and the handwheel pulled out, thus giving a single worm gear mechanical drive to the dampers or valves. This drive is irreversible so that no locking devices are required to retain a given hand setting. This is also true of automatic operation since, should the power fail, the regulators become locked automatically in the position held at the moment of power failure.

The all-electric control systems shown in the following diagrams and illustrations have been designed primarily to improve reliability of operation. In doing so, much thought has been given to the simplicity of the basic control system so that its every function and mechanism come within the comprehension of the average operating engineer.

With the foregoing statements I have only touched on the highlights of a modern electric combustion control system,

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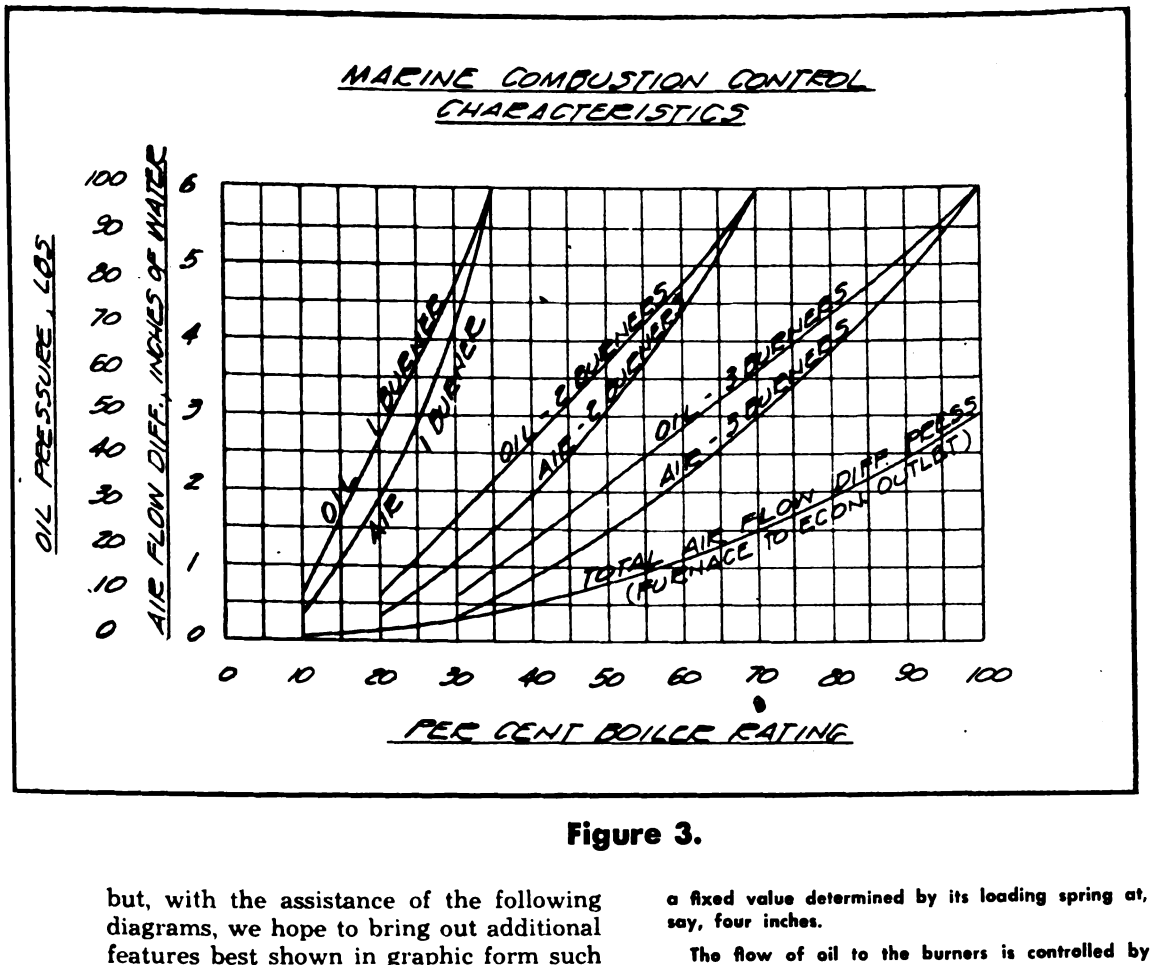


Figure 3.

but, with the assistance of the following diagrams, we hope to bring out additional features best shown in graphic form such as the method used for fuel-air ratio adjustment, the reason why the fuel-air ratio does not change with the number of burners in use, and some response curves showing the action of the inertia stabilizer.

The following four diagrams are presented to illustrate progressively the basic control principles of the most widely used type of electric marine combustion control.

Figure No. 1 (diagram No. 8867) shows the first step to consider in order to understand the basic control of fuel and air and their proportionality.

The electric regulator shown in the upper part of this diagram controls the total air to the furnace by direct operation of the forced draft fan damper. It is responsive to the differential pressure taken from the windbox to the furnace, and, as shown, is maintaining this differential pressure constant at a fixed value determined by its loading spring at, say, four inches.

The flow of oil to the burners is controlled by the automatic full-compensated valve shown supplying fuel oil to the three mechanical atomizing burners. It is also regulating for a constant pressure established by its loading spring to give a burner pressure of, say, 180 pounds.

These two regulated pressures establish the fuel-air ratio, or excess air, for a given size of burner tips in the three oil burners. Now, should one burner register be shut off and the hand oil valve closed to the same burner, the air pressure and oil pressure to the remaining two burners would tend to increase, but this would immediately be felt by the air regulator and automatic oil valve which immediately return their respective pressures to their original settings of four inches and 180 pounds, thus holding the fuel-air ratio at the same previously established value. However, there would be one-third less air and oil supplied to the furnace.

Of course, with such a system it would be necessary to adjust the spring loading on each regulator to give various amounts of heat input required between the fixed capacities of one, two or three burners. This is what the master steam pressure regulator does as shown on the next Figure, No. 2 (diagram No. 8869).

To the previous arrangement we have added on this diagram the master steam pressure regulator and the fuel-air ratio adjusting device.

The master steam pressure regulator, which is responsive to load as reflected in the superheater header pressure, is directly connected to the loading springs of the air volume regulator and oil flow valve so that any movement of its power arm simultaneously changes the air and oil loading with a corresponding increase or decrease in the flow of air and oil to the furnace.

The mechanical connection from the steam pressure regulator to the oil valve spring loading lever is direct. However, the linkage from the steam pressure regulator to the air volume regulator's loading springs passes through the adjustable ratio mechanism and thence to a cam and lever which operate the air volume regulator's loading springs.

This arrangement permits adjustment of the fuel-air ratio or CO_2 when different sizes of burner tips are used.

For this system the basic response of oil pressure and air differential pressure is shown graphically at the bottom of the diagram. However, should the burner performance curves not exactly follow these basic laws, then the loading cam, located within the air volume regulator, can be reshaped to give performance exactly matching the required burner characteristics.

To cover as wide a field of application as possible on this diagram we have added steam atomizing valves showing a constant steam pressure valve first and a differential pressure steam valve second. The latter supplies an atomizing steam pressure to the burners having a fixed differential pressure in excess of the oil pressure.

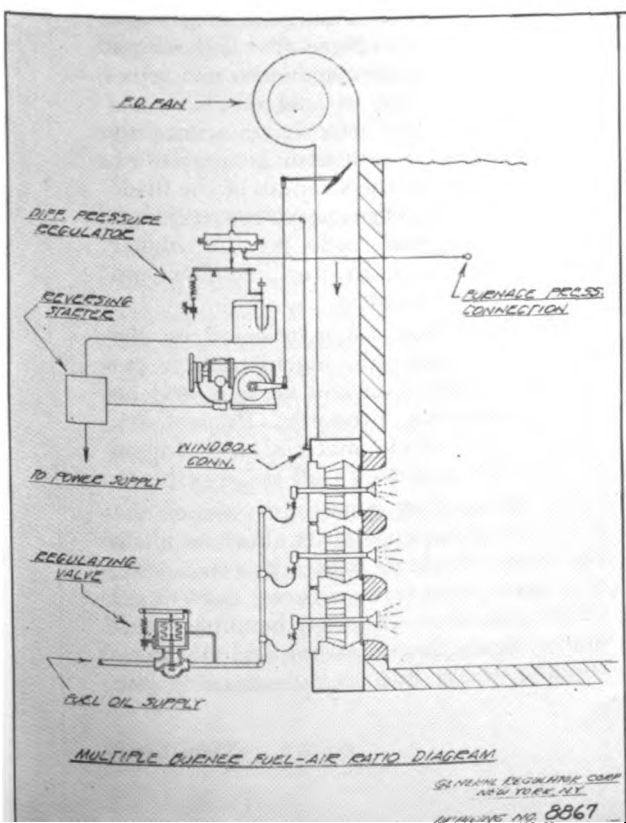
In order to save atomizing steam this differential pressure frequently must cut off to a constant value before the full burner capacity is reached. This is accomplished by the differential pressure valve opening wide at a predetermined value and the steam pressure is then regulated at a constant value from thence on by the first steam pressure valve.

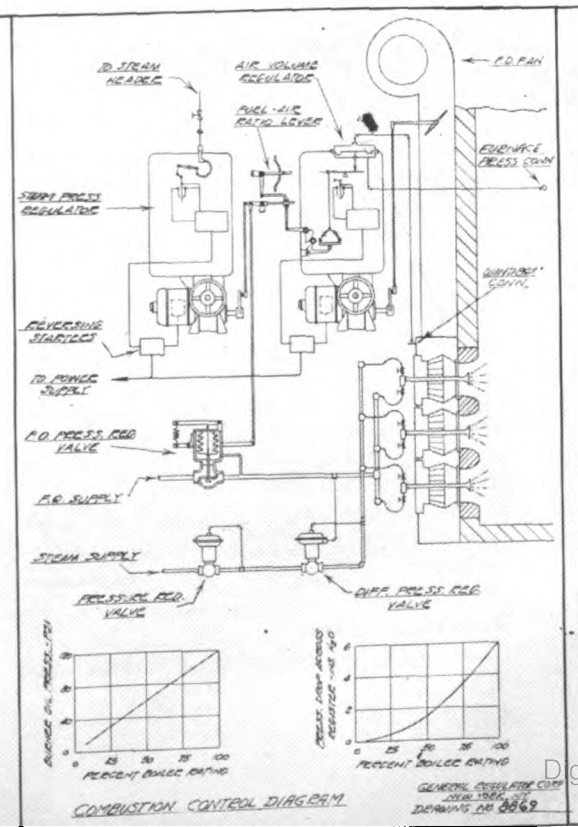
The third Figure 3 (diagram No. 8868) illustrates graphically the response of oil and air in terms of oil pressure and differential pressure versus boiler rating, and is plotted for the three-burner arrangement previously described. This graph clearly shows

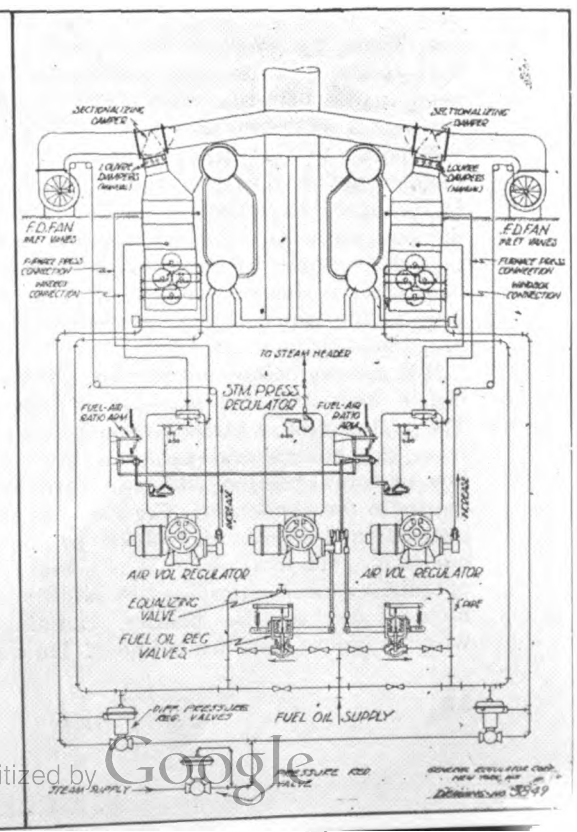
Figure 1.

Figure 2.

Figure 4.







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PORT ENGINEERS

the advantages of using the differential pressure across the register instead of the older method of using the total drop from furnace to economizer outlet. Please note that, as the boiler output is reduced and a burner is cut out, the differential pressure returns to its former high value as each burner is cut off. Thus, for each burner's operation the same range of air flow differential pressure is used. Hence, for one-burner operation at mid-capacity a control pressure value of around one and one-half inches is obtained, whereas only a few hundreds of an inch is available with the older method shown on the bottom curve.

These higher control pressures assure greater accuracy of the air flow control and a much larger range of close regulation.

Figure No. 4 (diagram No. 3849) shows the final application of the foregoing three diagrams to a complete combustion control arrangement for one ship equipped with two boilers each having four steam atomizing oil burners.

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MODERN MARINE STEAM TURBINES

By HAROLD W. SEMAR

Marine Turbine Engineering Dept.
Westinghouse Electric Corp.

The development of the Marine Steam Turbines began about fifty years ago, after the steam turbine had proven itself to be a reliable and efficient prime mover in powers suitable for ship propulsion.

There has since been continual improvement in reliability, efficiency and in weight and space requirement which has brought about the modern marine turbine.

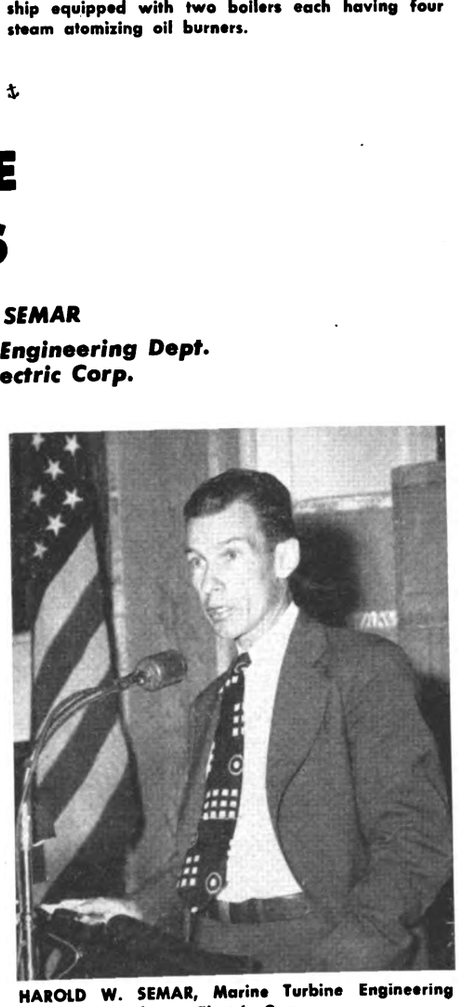
Other propulsion means still find favor in some applications. The reciprocating engine which was the standard means for propelling ships of all classes when the turbine was introduced is still used in some classes of vessels. The Diesel engine is also applied over a range of powers that overlap the range of the steam turbine.

And as we look ahead today, we can expect that gas turbines will make a bid for the propulsion of some classes of ships.

For the present and foreseeable future, however, the steam turbine is and will continue to be universally used for the propulsion of ships requiring large powers. There is also every reason to believe that steam turbines will continue to be used in the majority of cargo ships and tankers of moderate powers.

Needless to say, the development of the modern turbine has seen the introduction of innumerable variations in details and in arrangements of the turbines with regard to their neighboring equipment. Out of all these variations there has grown the present-day geared-turbine propulsion drive.

It is a cross-compound turbine, consisting of high and low pressure cylinders. The high pressure turbine receives steam from the boilers and exhausts into the low pressure turbine which in turn exhausts to the condenser. The turbines are proportioned so that each develops about one-half of the total power. The power for operation astern is provided by additional nozzles and reverse blading contained within the low pressure cylinder. During



HAROLD W. SEMAR, Marine Turbine Engineering Dept., Westinghouse Electric Corp.

ahead running, this reverse blading turns in the rarefied atmosphere of the turbine exhaust so that its windage friction is negligible.

The full ahead steam quantity is available for running astern, and only about one half of ahead power is necessary, so that the astern element can be made compact by virtue of its relative inefficiency.

The low pressure turbine is mounted directly above the condenser and is rigidly bolted to it. Either the low pressure turbine or the condenser is mounted on the ship's structure, and whichever is so supported becomes the support for the other. This arrangement provides the most direct path for steam from the last blades of the turbine to the condenser tubes. It makes possible a rigid support for both condenser and turbine without complicated means for taking care of expansion between them.

Reduction Gears

The high and low pressure turbine output shafts are each connected through double reduction gears to the propeller shaft. Each turbine drives its own train of first reduction gears, which in turn drive second reduction pinions, meshing with the single second reduction or "bull" gear. The double reduction gears permit a high enough range of speed ratio so that each turbine and the propeller can operate at their most efficient speeds.

The double reduction gears also allow a considerable spread in the center distance between the propeller shaft and the turbine shafts. This allows the low pressure turbine to be mounted a sufficient distance above the ship's bottom to make convenient the location of the condenser underneath.

Two types of reduction gears are in common use; the nested gear in which each first reduction gear and second reduction pinion are assembled to make a single two bearing rotor, and the articulated gear in which each first reduction gear and second reduction pinion is independently supported and connected to each other by a flexible coupling.

With either type of gear the gear casing is a single structure mounted on the ship's foundation which may serve as the support for the after end of either or both turbines.

The shaft connections from the turbines to their pinions are flexible to allow for small displacements between the turbines and pinion axes. They also permit axial slipping so that the turbine rotor position is controlled by its own thrust bearing, independent of the fore and aft position of its pinion.

Fig. 1 illustrates a typical arrangement of turbines and gear with the covers removed to show the turbine and gear rotors. Fig. 2 is a cross-section of a typical high pressure turbine and Fig. 3 is a sectional drawing of a low pressure turbine and shows the astern element contained within this turbine.

Refined Details

In some respects the present-day turbine differs from its predecessors only in refinement of detail. Blading is a good example. The shape of the steam passage between blades has undergone only slight modification, but in place of rolled, simple section brass and copper blades and separate packing pieces to hold the blades in their grooves, we now have accurately machined steel blades with integral roots. Every increase in the strength of the blade material and every improvement in its root fastening has made possible higher blade speeds and, in turn, smaller and more efficient turbines.

The blade material is selected on the basis of its strength, machinability, resistance to corrosion and erosion, and on its dampening property. Present-day chrome steel blade material has proven to be highly suitable in all these respects.

The dampening quality is one of the most critical because of its effect on blade vibration. Turbine blades are subjected to stresses from three sources; centrifugal stress due to its rotation, bending stress due to steady flow of steam, and vibratory bending stress due to pulsations in the

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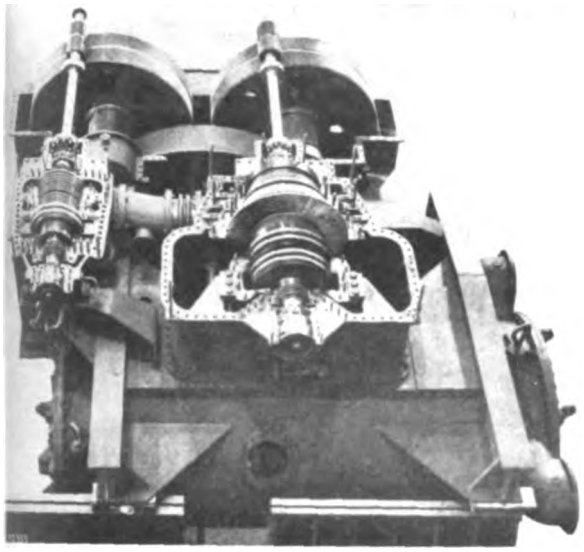
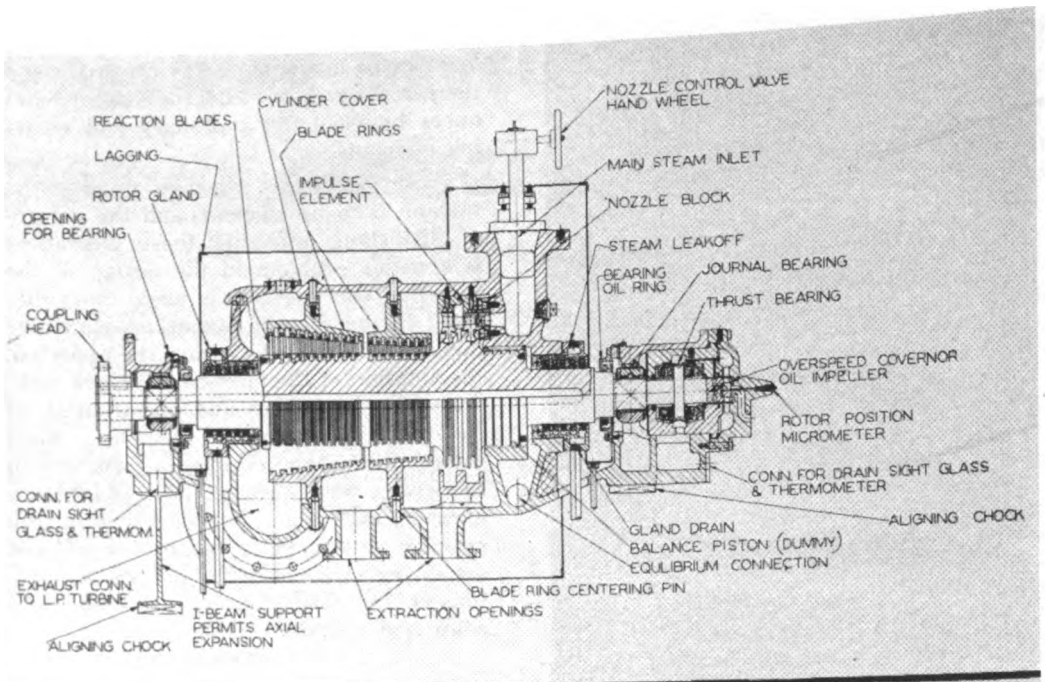


Figure 1.



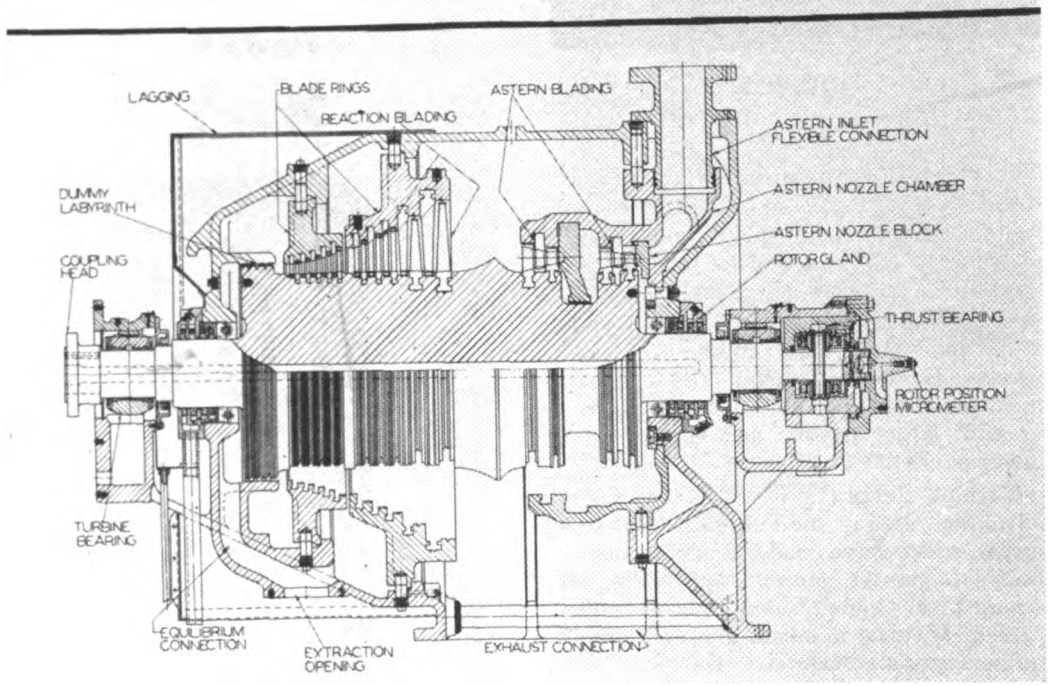


Figure 2.—Top **Lower—Figure 3.**

flow of steam through individual blade passages. The latter manifest themselves principally at the two extremes in the steam path in the first row of blades following the inlet nozzles, and in the last row of blades before exhausting to the condenser. Vibratory stresses explain a number of failures in blades which were more than adequate to resist the centrifugal and steady steam forces acting upon them. They are an important factor that has only recently become well understood.

The first row blades are short and of heavy cross section, but still the impact of entering a jet of high velocity and dense steam imposes critical stresses upon them. These stresses are amplified if the blade is of a material that will vibrate freely, so that repeated impacts can build up to higher and higher amplitudes of vibration.

The last row blades are long and relatively flexible and rotate in a nearly uniform stream of low density steam. But because of their extreme flexibility even small irregularities in steam flow can set up critical vibration in these blades. For both first and last row blades it is necessary to understand the nature of the vibratory forces and to proportion the blades so that they do not vibrate to destructive amplitudes under these forces.

A typical blade is pictured on Fig. 4 and a portion of a bladed rotor before the addition of the riveted shroud on Fig. 5.

High Steam Temperatures

Any discussion of the modern steam turbine must include a description of the most significant feature by which it differs from its recent predecessors. This feature is its ability to operate under higher steam temperatures and to burn into useful power a greater part of the heat energy that is put into it.

The efficiency of the turbine in terms of horsepower output and total heat input will increase with increased steam conditions. Its maximum efficiency will be at the highest pressures and temperatures for which it is practical to construct the turbine. It should be noted that this maximum efficiency is based on the total heat energy of the steam fed to the turbine. The higher pressures and temperatures render a greater portion of this energy as available energy which a theoretically perfect engine could convert into mechanical work. Actually, the internal efficiency of the turbine is based on the fraction of heat energy which is available. This internal efficiency is generally no higher with the higher steam conditions and may even be lower with higher steam inlet conditions.

Other factors, however, act to offset the gains in turbine efficiency at extreme steam conditions, and the determination of the exact steam conditions that will yield the most economical overall plant economy is exceedingly complex. The gain due to increased turbine efficiency must be weighed against the increased costs of installation and operation of the entire power plant.

A review of all these factors is beyond the scope of this paper. Reference should be made to the work of MacMillan and Ireland* in which some sixteen initial cost items are considered in addition to the overall heat balance, fuel cost, and other factors, which affect the selection of the most economical steam conditions.

Increased Turbine Efficiency

The gains due to increased turbine efficiency, however, can be more readily shown, and curve, Fig. 6, indicates how the turbine heat rate decreases with increasing temperature and pressure. This curve is plotted against temperature, and individual points on the curve have been selected with representative pressures. In this way we can show, by a single curve, the effect of the two variables, pressure and temperature, more clearly than by plotting each variable separately. The shape of this curve is significant. Its slope decreases with increasing temperature, which means that the rate of improvement in efficiency, with increased temperature, falls off as the temperatures go higher.

*"Economic Selection of steam conditions for Merchant Ships" presented at November 1948 annual meeting of the Society of Naval Architects and Marine Engineers.

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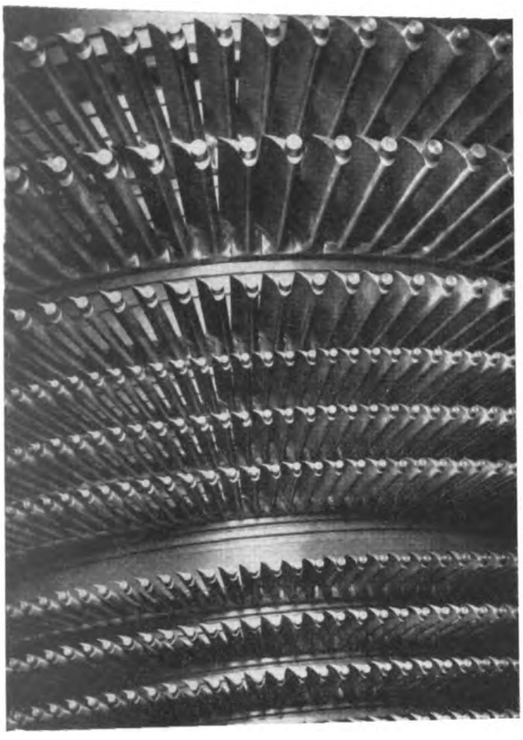


Figure 5.

This decreasing rate of improvement acting with an increasing rate of increased costs produces a point of optimum overall economy at some point along this curve.

A power of 15,000 HP was selected for preparing this curve, and its shape would vary somewhat with higher or lower powers. Generally speaking, the improvement in efficiency will be somewhat greater with larger powers and smaller with lower powers.

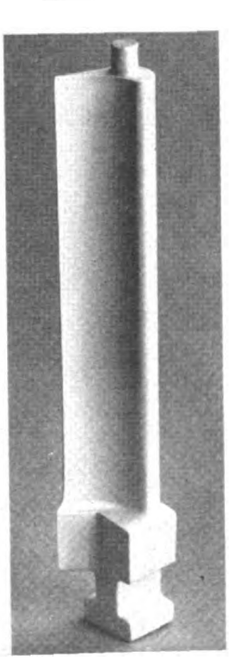
Turbine designers have always taken advantage of any metallurgical developments which have made available materials of greater strength or of equal strength at higher temperatures. The present advance in steam temperatures is no exception. Materials are available today that have higher strength at elevated temperatures than were available a few years ago. These metallurgical advances have been accelerated by more urgent needs in other machines, notably the gas turbine, which would be impractical if it were limited to materials no stronger than ordinary steels.

It might appear that it is only necessary to substitute these new materials in order to make a turbine suitable for higher temperatures. If the new material has a strength at, say, 900 degrees F. equal to the strength of the old material at 800 degrees F., then a turbine cylinder of the new material may be expected to be suitable for the 100 degrees higher temperature. There are several reasons why this is not so. Generally, the higher temperature is accompanied by higher pressures, so that those parts of a turbine cylinder which act as pressure vessels have to be made of greater thickness and with stronger bolting. But even more important is the effect of the greater expansions brought about by the higher temperatures.

We can consider a turbine cylinder as a pressure vessel of complicated shape, which must not only contain this pressure but must be so designed that distortions or changes in shape due to pressures and temperatures do not affect the close clearances between the stationary and rotating elements.

These clearances must be small if the turbine is to be efficient, and the control of distortions affecting these clearances is a major problem in the design of the turbine. This problem is made more difficult in the case of higher temperatures but it can be solved. As may be expected, the solution of the problem involves variations in the shapes and construction of the high temperature elements. Even though the metals continue to expand with increasing temperatures, it is possible to arrange the steam passages within the cylinder so that these expansions will not set up excessive stresses nor cause rubbing in the close clearances between the rotor and cylinder.

Figure 4.



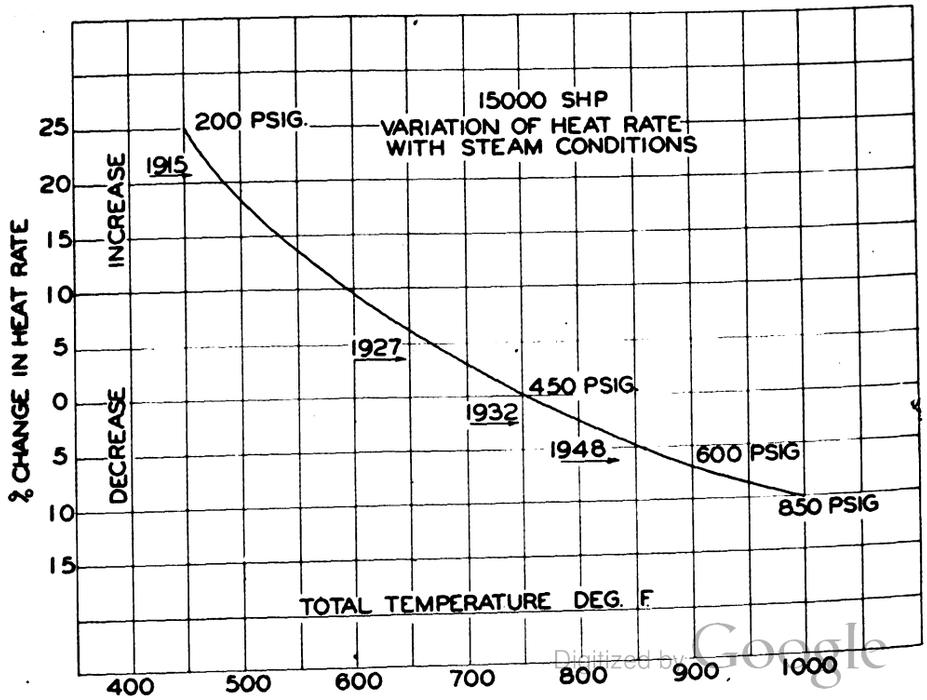
Temperature Differences

High temperatures alone are not the primary concern. If the entire turbine rotor and cylinder could be slowly and uniformly heated, no stresses would be introduced and no clearances would be affected. Both parts would simply grow at equal rates.

Temperature differences are the stress-makers. Even when running under steady load, the various zones within the turbine are exposed to steam of different temperature. During starting and maneuvering individual passages within the turbine are subjected to rapidly changing steam flows and steam temperatures. The turbine must be designed to operate under these conditions of temperature differences and temperature changes. The inlet zone of the turbine subject to the full steam temperature and to the most rapid rates of temperature changes is obviously the critical area. The arrangement of the steam passages in this zone is the key to modern high temperature performance. Fig. 7 shows the shape of the inlet passage for steam into the first stage nozzles. This is a standard arrangement for moderately high temperatures. Note that the entire top half of the cylinder structure on the inlet end is in contact with steam at inlet temperature. The corresponding bottom half contains steam that has been expanded through the first stage nozzles and is, therefore, at a reduced temperature. These unequal temperatures have the effect of elongating the top of the cylinder to a greater extent than the bottom half and to cause it to bow up slightly at its center.

This zone contains a number of passages which may or may not be open to inlet steam, depending on the position of the nozzle control valves. Therefore, the passages to some groups of nozzles may be heated more rapidly than the passages to other groups, a condition which creates local stresses in this part of the turbine. With this type of cylinder construction, temperature distortions and the resulting stresses can be kept within safe limits

Figure 6.



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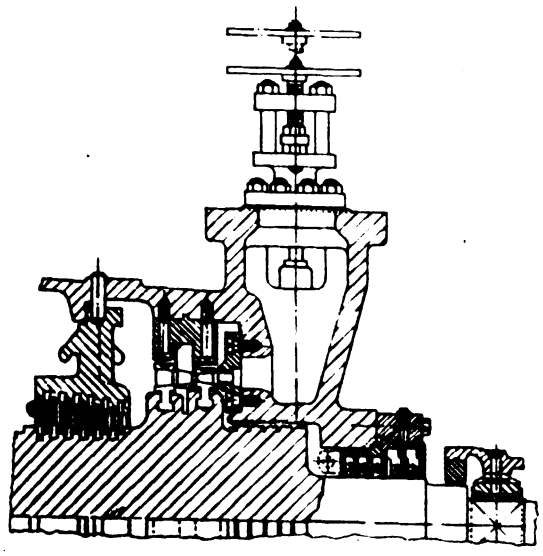


Figure 7.

for all operating and maneuvering conditions, for moderately high steam temperatures.

Higher steam temperatures require special means of isolating the inlet steam from direct contact with the main cylinder structure. Fig. 8 shows how this can be accomplished. The steam passage to each group of nozzles is, in effect, a single wall chamber with a minimum of attachment to the cylinder itself. This attachment to the cylinder is made by a thin-walled tube which gives adequate mechanical support, but which provides a restricted passage for the flow of heat from the inlet chamber to the cylinder cover. By this means, the inlet chamber is free to expand with a minimum of effect on the cylinder. Also the steam manifold above the inlet valves can be at maximum temperature, and any or all of the nozzle chambers can be at lower temperatures without introducing stresses of any consequence.

POSTWAR DEVELOPMENTS IN MARINE REFRIGERATION

By ***WILLIAM L. MASIN***
Engineer
Marine Dept.
Carrier Corporation

Since the end of World War II, there have been three major technical developments significant to all of us concerned with refrigeration aboard ships.

They are:

1. Development of high speed reciprocating compressors.
2. Adoption and widespread use by United States shipbuilders of centrifugal refrigeration units for large tonnage air conditioning and cargo refrigeration systems.
3. Recent introduction of a practical absorption refrigeration machine of high capacity for air conditioning and water chilling service.

The high speed reciprocating compressor and the centrifugal compressor unit have already proven their value, while the latest development—the absorption machine—offers many interesting possibilities for the future.

The purpose of this paper is to discuss marine refrigeration generally, and to describe the newly developed equipment from the shipboard application point of view.



WILLIAM L. MASIN, Engineer, Marine Dept., Carrier Corporation.

Types of Systems

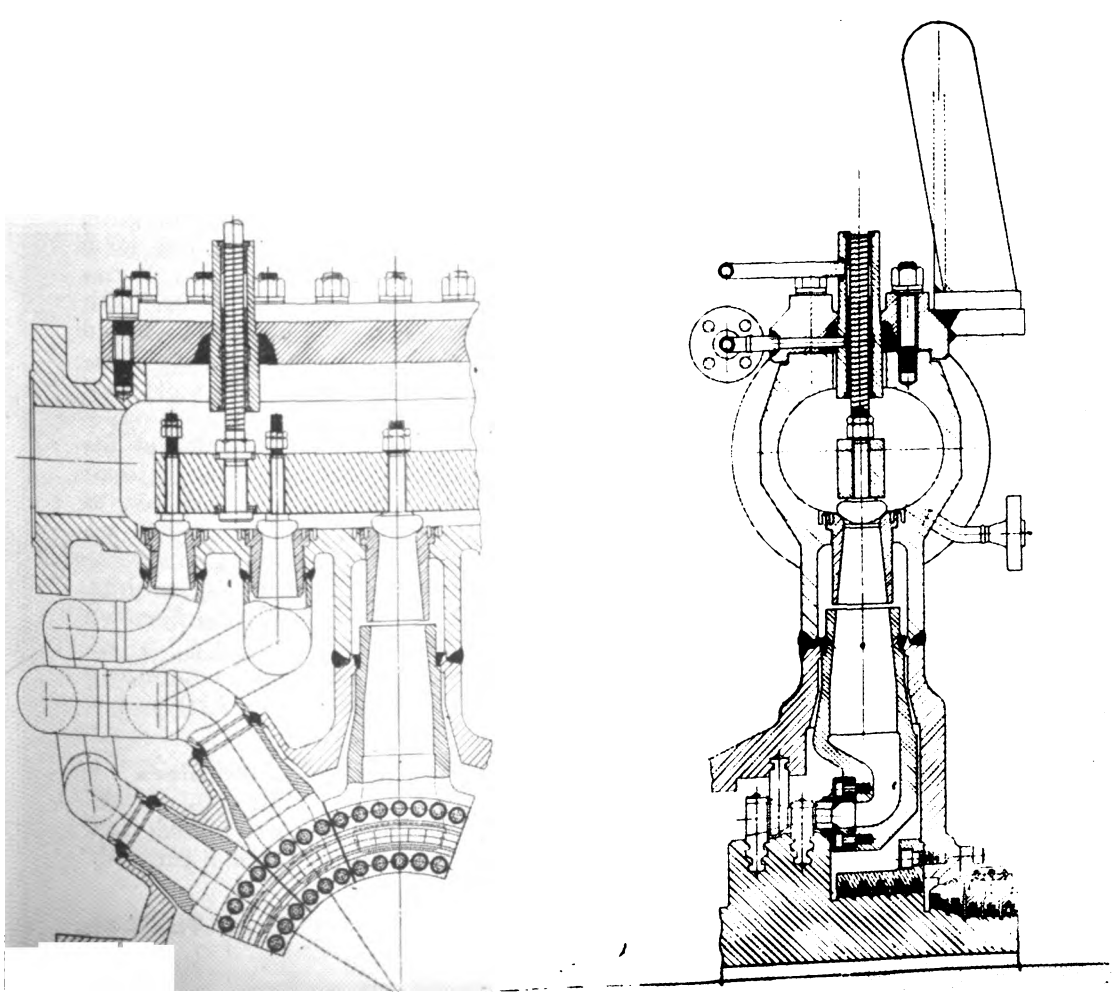
Practically all applications of marine refrigeration may be grouped into the following classifications: (1) Ships' Stores, (2) Cargo, and (3) Air Conditioning.

It may be argued in accordance with the modern concept of air conditioning, which properly defined means the simultaneous control of temperature, humidity and air circulation within an enclosure, that all these classifications are really air conditioning problems since the factors of temperature, humidity and air motion are of paramount importance in the storage of perishable foodstuffs as well as in air conditioning for human comfort. The basic difference is the temperature range involved, and from this standpoint we may subdivide these classifications into two categories, namely, low and high temperature. All ships' stores and cargo applications may be grouped into the low temperature category requiring refrigerant or brine temperatures ranging from —25 F for frozen products to 35 F for fruits, vegetables and dairy products. The high temperature category covers air conditioning which requires refrigerant or chilled water temperatures about 40 F to 45 F. The type and construction of compressor and evaporator employed for any given application depends to a large extent on the temperatures to be produced.

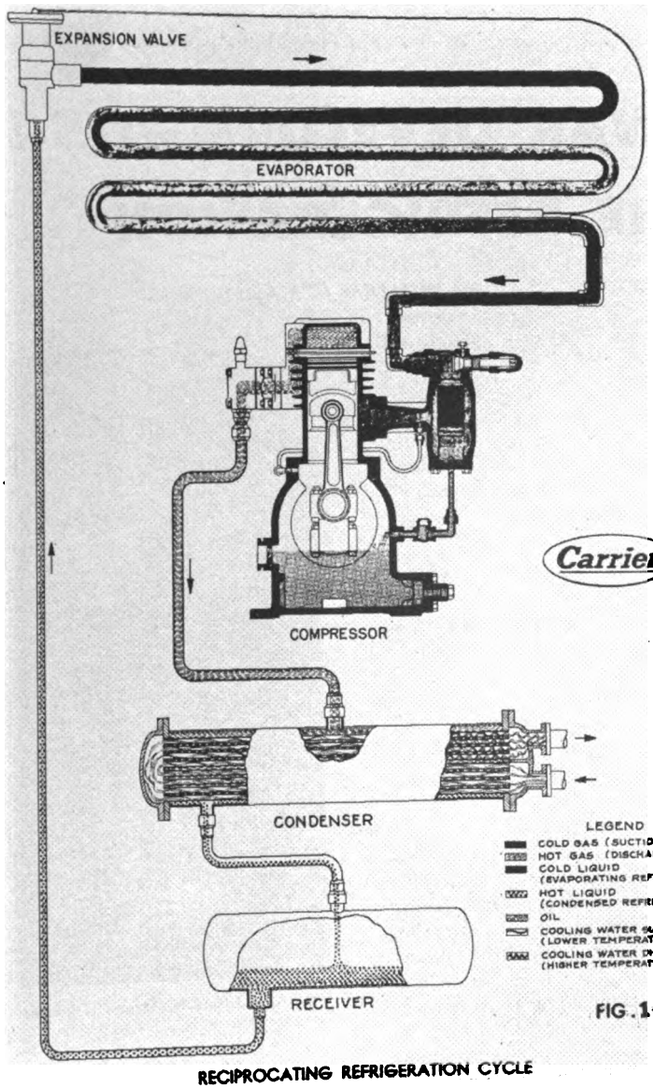
Compression Refrigeration Cycle

The compression system of refrigeration may be defined as the use of mechanical means to produce and maintain pressures and temperatures of a system which will allow heat to flow from the refrigerated

Figure 8.



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RECIPROCATING REFRIGERATION CYCLE

Refrigerant gas, such as Freon-12, is compressed from evaporator pressure to condensing pressure by the reciprocating compressor. It is then cooled and condensed to a liquid in the condensor which uses a cooling medium such as sea water to dissipate the heat of compression and latent heat of condensation of the gas.
The condensed liquid, still at high pressure, is collected in the receiver and then passes to the expansion valve where it is reduced in pressure and temperature by adiabatic expansion through the valve. In the evaporator the liquid boils and evaporates again to a gas at a lower temperature corresponding to the saturation temperature of the gas at the lower evaporator pressure.
During the boiling process an amount of heat equal to the latent heat of evaporation of the refrigerant is absorbed by the refrigerant through the metallic walls of the evaporator. The evaporated gas then flows again to the compressor where the cycle is repeated.
The actual pressures and temperatures maintained in the condenser and evaporator depend on the temperature of the coolant circulated through the condenser, the physical properties of the refrigerant, and the pumping capacity of the compressor.

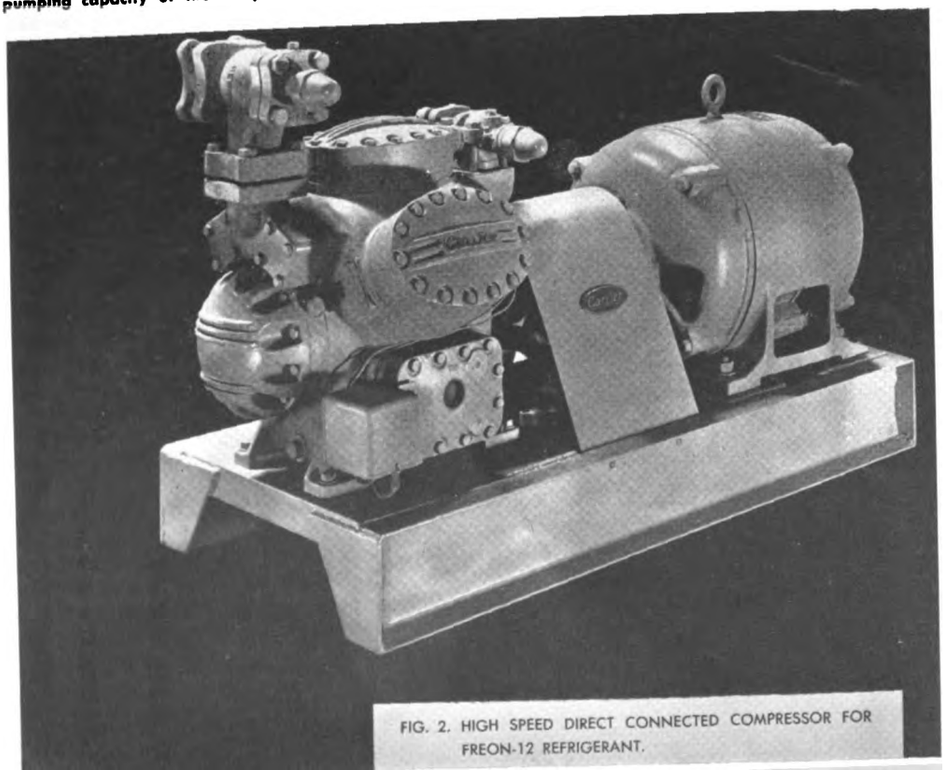


FIG. 2. HIGH SPEED DIRECT CONNECTED COMPRESSOR FOR FREON-12 REFRIGERANT.

space and be conveyed to some external point where it may be dissipated. Fig. 1 illustrates diagrammatically and explains a typical refrigeration cycle.

The principal units of this system are the compressor, condenser, receiver to hold condensed refrigerant, expansion valve, and evaporator. The compressor, condenser, receiver and accessory equipment such as piping, valves, controls, etc., are referred to as the refrigeration "high-side" whereas the evaporator with its equipment is called the refrigeration "low-side."

Refrigerants

Without attempting to describe all the factors involved in the selection of a suitable refrigerant, we list the following five as being most important from the standpoint of marine application:

1. Toxicity
2. Inflammability
3. Design pressure
4. Availability
5. Thermodynamic properties

The toxic and inflammable properties of the gas are, of course, a paramount consideration on shipboard where the life and safety of passengers and crew are involved. This rules out all of the hazardous refrigerants such as sulfur dioxide, ammonia and methyl chloride for the design of a modern marine refrigerating plant, particularly for passenger ships.

Design pressure for high-side and low-side equipment is most important from the standpoint of weight, since machinery must be excessively heavy to withstand the working pressure of such high pressure refrigerants as carbon dioxide. There is also an element of hazard involved in the use of such high pressure. It is for this reason that carbon dioxide has become obsolete as a refrigerant aboard ships.

Availability is an important factor because ships under emergency conditions may have to be serviced at some foreign port where stocks of the more commonly used refrigerants are usually obtainable from a local distributor. To reduce the possibility of running short of refrigerant, practically all shipboard installations carry a complete spare charge. Under this heading, consideration must also be given to the national productive capacity for a given refrigerant, since in times of national emergency, as during the last war, there may be a sudden increased demand for a refrigerant accompanied by a shortage of time and materials to build new productive facilities.

The thermodynamic properties of the refrigerant, measured primarily in terms of compressor displacement per ton of refrigerating effect and horsepower per ton, have an important bearing on the size of compressor required for a given duty, and the horsepower or steam consumption of the driver.

Table 1 lists some of the comparative properties of refrigerants used for marine application.

Types of Refrigeration Machines

The various types of refrigeration machines which have been extensively used in the past or are being used currently

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by the United States Shipbuilding Industry are listed in Table 2. Also shown in this table are the refrigerants commonly used with each machine, adaptability of specific machines to high or low temperature cooling, approximate speed ranges and type of drive or source of power. All the machines listed, with the exception of Freon-11 centrifugals, the steam jet and the absorption machine are suitable for either the direct or indirect method of cooling; i.e. cooling may be accomplished by direct transference of heat from the air, or substance being cooled to the refrigerant as in the direct system, or the refrigerant may be used to first cool water or brine in an interchanger and then circulating the water or brine by a pump to remote cooling units. The last three types mentioned are designed only for the indirect system, the intermediate coolant in most cases being water.

Reciprocating Compressors

The earliest installations of refrigeration on shipboard used CO_2 compressors. The chief reason for this was that until the advent of the Freon refrigerants, during the late 1930's, CO_2 was the safest refrigerant known. The principal disadvantage to the use of CO_2 is that operating pressures are in the neighborhood of 1,000 psig, which necessitates very heavy machinery and excessive horsepower. These factors have resulted in the virtual discontinuance of the use of CO_2 equipment in this country.

Ammonia compressors, while still enjoying a limited acceptance, are becoming obsolete primarily because of the hazardous properties of the refrigerant. Current practice rules out ammonia for all new passenger vessel installations, and its use for other classes of ships is rapidly being superseded by the modern line of Freon compressors which are smaller, lighter and automatic in control as well as being safer.

By far the great majority of marine refrigeration installations being made today use Freon-12 reciprocating compressors. For U. S. Navy vessels and auxiliaries and new construction coming under the cognizance of the United States Maritime Commission, Freon-12 compressors are standard for both high and low temperature applications under 100 horsepower. For the higher horsepowers there are other types of machines which are described later in this presentation.

Re-examination of the properties of Freon-12 refrigerant, as listed in Table 1, indicates the principal reasons why Freon-12 equipment enjoys such an advantage. Its relatively low design pressure compared with CO_2 or ammonia results in a light weight compact machine, while the non-toxic and non-inflammable qualities render it particularly suited for use on shipboard. The compressor displacement required for a given capacity is about 70% more than ammonia, but the saving in construction weight more than offsets the additional displacement required. A combination of these factors adds up to greater economy in first cost, installation cost and operating expenses.

TABLE 1

COMPARATIVE PROPERTIES OF REFRIGERANTS

Name	Freon — 11	Freon — 12	Ammonia	Water	Carbon Dioxide
Alternate Name	Trichloromonofluoromethane	Difluorodichloromethane	Anhydrous Ammonia		
Chemical Formula	CCL^2F	CCL^2F^2	NH^3	H^2O	CO^2
Molecular Weight	137.38	120.9	17.03	18.01	44.0
Boiling Point at 1 atm. (°F)	74.7	—21.6	—28.0	212	—109.3
Critical Temperature (°F)	388.4	232.7	271.2	706.1	87.8
Critical Pressure (PSIA)	635	582	1651	3226	1069.9
Ratio Density $\frac{\text{Vapor}}{\text{Air}}$ (at atm. pressure)	4.75	4.2	0.59	0.62	1.52
Operating Pressures (PSIA) at 0°	2.55	23.87	30.42	0.12	305.5
40°	7.03	51.68	73.32	0.95	567.8
100°	23.6	131.6	211.9		
*Design Pressure (PSIG) High Side	40	235	300		1500
Low Side	40	150	150		1000
Net Refrigerating Effect (Btu/Lb) 5° to 86°	67.54	51.07	474.4		55.45
40° to 100°	68.84	51.55	467.8	100.8	
Carnot Cycle Efficiency (% of ideal) 5° to 86°	87.8	82.2	84.5	71.5	44.6
Displacement per Ton (cfm) 5° to 86°	36.33	5.82	3.44		0.943
Horsepower per Ton 5° to 86°	.935	.997	.991	1.15	1.843
Solubility of Water in Refrigerant	Negligible	Negligible	High		High
Miscibility with Oil	Miscible	Miscible	None	None	None
Toxic Concentration (Percent by Volume)	Above 10%	Above 20%	0.55%		30%
Duration of Exposure (Kills or Injures)	2 Hr.	2 Hr.	½ Hr.		½ Hr.
Odor	Odorless	Odorless	Pungent		None
Warning Properties	None	None	Irritant		None
Explosives Range (% by Volume)	None	None	16-25%		None
ASRE Safety Group	1	1	2		1
Toxic Decomposition Products	Yes	Yes	Not Fatal		No

* ASRE Marine Standard #26

The modern Freon-12 compressor, as developed subsequent to the end of World War II, is a high speed machine, direct connected through a flexible coupling to an electric motor operating at 1150 rpm to 1750 rpm. Direct connection to a steam turbine through speed reduction gearing is also highly practical, and has been used on a number of installations though it is not the usual arrangement. The standard design machine is the vertical, multi-cylinder, single acting type, with air cooled cylinder walls, suction gas entering the cylinders direct, and a forced-feed lubrication system. The current trend is away from V-belt, slow speed machines which were standard until about 1946. Fig. 2 illustrates one of these new direct connected compressor units which is rated 7½ tons at 5 F suction and 86 F condensing temperatures.

Among the advantages of the high speed direct connected compressor, as opposed to its slow speed counterpart, are greater compactness, less weight and reduced maintenance. Automatic unloading of cylinders with reduction of load is incorporated as a standard feature of the new

TABLE 2

TYPES OF MARINE REFRIGERATION MACHINES

Type Machine	Refrigerant	Application (High or Low Temperature)	Average Speed Range — RPM	USUAL TYPE DRIVE: Source of Power	USUAL TYPE DRIVE: Method of Connection
Reciprocating	Carbon Dioxide	Low	80 — 350	Motor or Steam engine	Direct connected or belted
	Ammonia	Low	200 — 360 900 — 1150	Motor or Steam engine	Direct connected or belted
	Freon 12	Both	300 — 900 1150 — 1750	Motor Motor	V-Belt or Direct connected
Centrifugal	Freon 11 or Freon 12	Both	4000 — 8000	Motor	Direct Conn. through Reducing Gear
				Steam Turbine	Direct connected
Steam Jet	Water	High		Steam	
Absorption	Water (Salt absorber)	High		Steam	

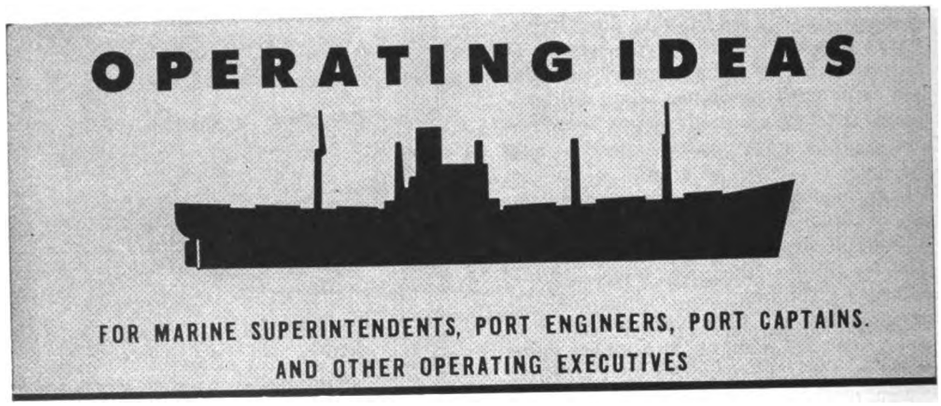
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line of compressors. This permits flexibility in operation and the use of constant speed motor drive. The automatic unloading feature has the further advantage of enabling the compressor to start in the unloaded condition, thus reducing the starting inrush current, an important consideration in cases of limited generator capacity. For comparative purposes, the earlier design slow speed compressor having the same capacity as the one illustrated in Fig. 2, operating at 600 rpm, weighs 63% more and occupies 61% more deck area.

With the advent of Freon-12 equipment came the development of fully automatic control to which Freon is particularly well adapted. This trend coincided with an ever increasing stringency on the part of shipping operators toward the maintenance of closer temperature differentials for reefer cargo as a means of insuring a high quality product at the ship's destination. Such close temperature differentials are obtainable with automatic controls which have been developed after considerable experience to a high degree of dependability, and eliminate to the greatest possible extent the human element involved in manual operation.

At this point, it may be well to consider one of the limitations which the marine refrigeration engineer must bear in mind when designing a Freon-12 system. This is how low it is possible to go in temperature with single-stage compressor operation. The practical limit of compression ratio without water jacketed heads is about 12, at which point the compressor volumetric efficiency is in the neighborhood of 35%. At a condensing temperature of 100 F, which is about as low as may be conservatively expected with a sea water temperature of 85 F to 90 F, this compression ratio represents a suction temperature of —31 F. Making some reasonable allowance for suction line pressure drop, this means that the minimum compartment temperature practically obtainable is about —10 F with a direct expansion system, or 0 F with an indirect brine system. Such low temperature may be obtained only at considerable sacrifice in compressor capacity and horsepower, which is apparent from the fact that at these low operating conditions, each drop of 5 F in temperature results in a reduction of compressor capacity of about 20%. For this reason, a design temperature of 0 F is more or less standard in the shipping industry today for frozen cargo and ships' stores.

Ultra low temperatures as low as —35 F refrigerant, such as would be required by a fish freezing application, are feasible by going to two-stage compressor operation. This may be accomplished by direct staging, i.e., having one compressor discharge directly into the suction of the second, or by cascading, i.e., cooling brine with one compressor and then circulating the cooled brine through the condenser of the second.



THE FUNCTIONS OF A SHIP

By E. V. LEWIS
Naval Architect
George G. Sharp

What are the functions of a typical passenger-cargo ship? The answer to this question will seem obvious to most readers, but sometimes the answers to obvious questions reveal new aspects of familiar problems. In this case an analysis of the functions of a ship involves the principles of ship design that are fully covered in the literature of naval architecture, but with a difference in grouping and emphasis.

Whether the naval architect thinks of his problem in terms of function or not, a design is largely determined by the functions the ship is to perform. The quality of a design depends mainly on the degree of efficiency with which the ship fulfills these functions. Hence, new materials, new methods, new ideas must always be applied with the greatest ingenuity if there is to be progress.

One of the influences in this country toward originality of design and emphasis on basic principles in the field of architecture is the Graduate School of Design at Harvard University, which is headed by the internationally known architect and designer Walter Gropius. It is interesting to note that an exhibit was assembled recently by graduate students there covering ship design as an example of design based primarily on functional requirements. Even though any ship illustrates many aspects of functional design, some are better examples than others. There is always room for improvement, and hence a restatement of basic principles may be of interest.

Economic Aspects

A ship, like most other engineering structures, plays a part in a commercial enterprise. Hence, an analysis of the functions of a merchant ship must start with economics. A merchant ship may be defined as an engineering structure whose primary function is to act as a self-propelled water-borne unit of an organization for the transportation of goods and people. Accordingly, whenever the question of a possible new ship or ships arises, an overall study of the existing fleet and possible additions or replacements to it must be made. Schedules must be worked out providing the desired frequency of sailings and the relative operating costs determined for different possible fleets. For example, in a simple case there might be a choice between the following possibilities for carrying the same amount of cargo and number of passengers on weekly sailings:

(1) 5—15 knot cargo passenger ships, or
(2) 4—20 knot cargo passenger ships.

In the course of determining the best number, size and type of ships for the service, as well as in carrying out the design of the ship itself, a thorough study of the physical conditions of operation is also required. Such a study covers the route: distances between ports, prevailing currents, weather conditions, depth of water and navigational hazards. Important also are port conditions: space and depth of water available at piers, cargo handling methods and equipment, repair and maintenance facilities, etc.

The above studies establish the basic characteristics of the ships to be designed, i.e. their broad economic functions, and the limitations under which the ships are to operate.

Functions of a Ship in Detail

Having established the basic requirements and conditions, the naval architect is free to carry out the design of an individual ship on the basis of fulfilling these requirements in the most economical manner. The specific functions of a ship may be listed as follows:

1. To provide for the accommodation of a specified number of passengers under specified conditions of relative luxury, with the necessary dining and social facilities, ventila-

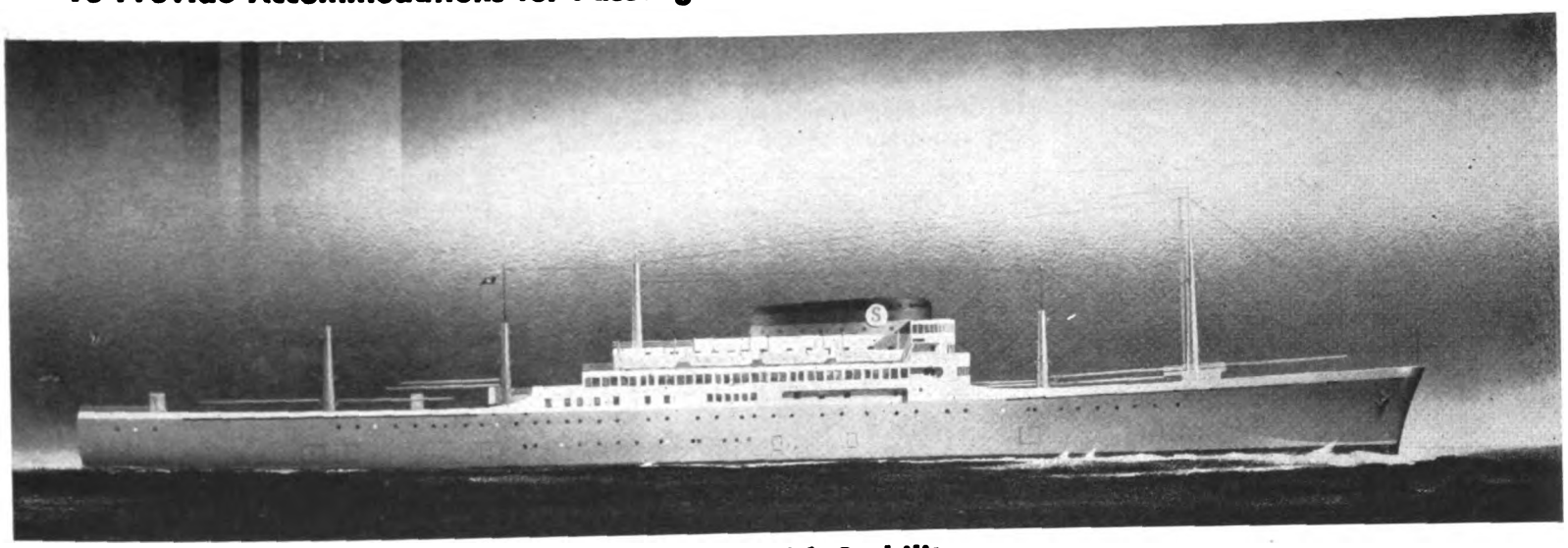
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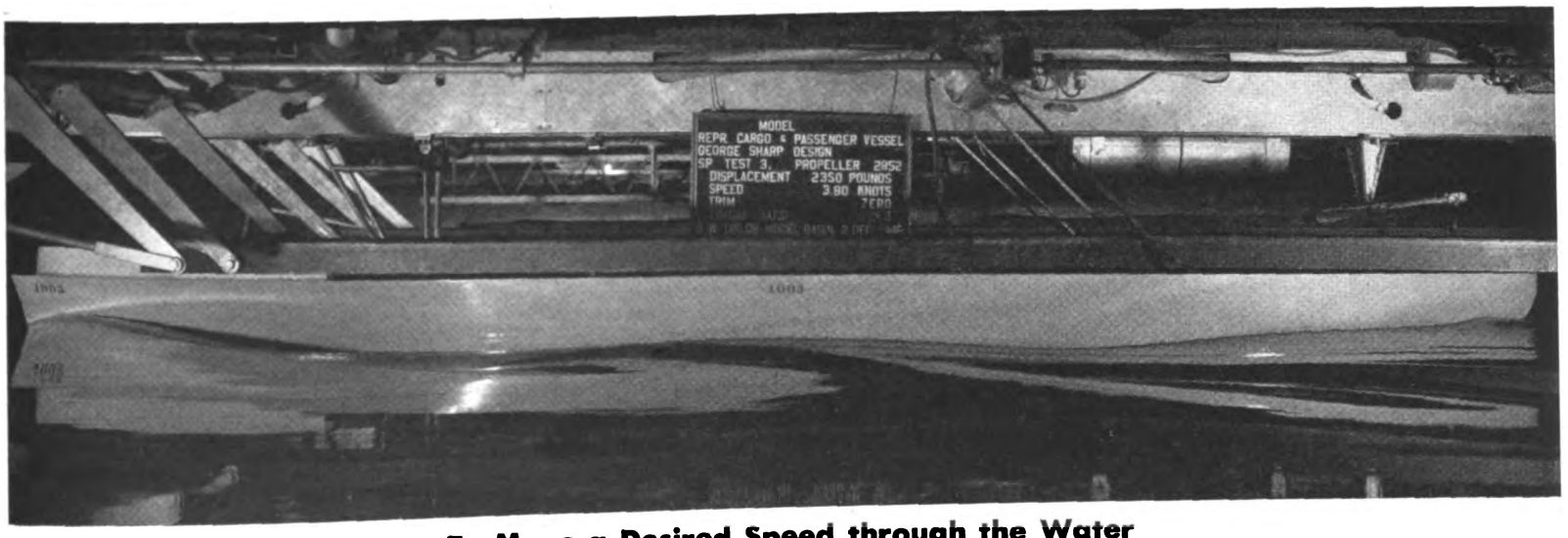
To Provide Accommodations for Passengers



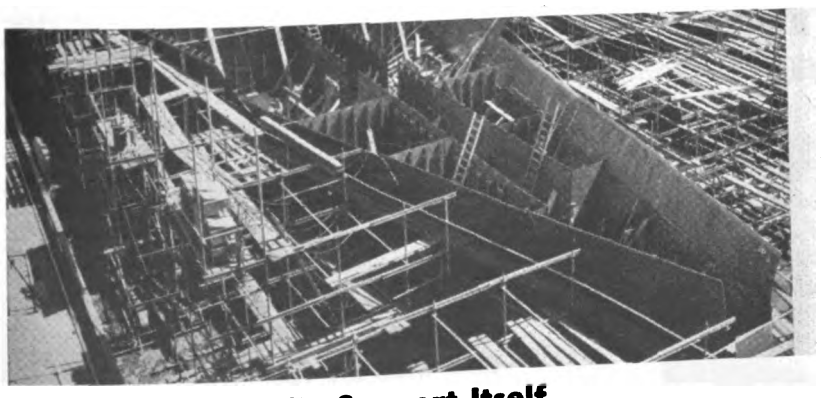
To Coordinate with Terminal



To Float with Stability



To Move a Desired Speed through the Water



To Support Itself



To Provide Space for Cargo

FUNCTIONS OF THE SHIP

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tion, lighting, plumbing, etc., and service personnel.

2. To provide for the stowage of a specified volume and weight of cargo in spaces having good shape and obstructions, with refrigeration and air conditioning as required by the types of cargo and route.
3. To float with proper draft, trim and stability in all conditions of loading, and in case of the most likely types of hull damage; to have safe, comfortable motion in a seaway.
4. To support itself structurally, together with cargo, passengers, crew, stores, etc. under both static conditions, at rest in still water, and dynamic conditions, in motion in a seaway.
5. To be able to move at the desired speed through the water with a minimum loss of speed due to wind and weather, under complete control at all times and with provisions for deck and engineering personnel. The design of the propelling machinery is the basic problem of marine engineering.
6. To coordinate effectively with shore facilities for handling of cargo, passengers and stores.

These functions are illustrated in the accompanying group of pictures. One of the most obvious ways in which functional principles are usually violated is in the design of the stack. A large stack is often adopted for reasons of appearance and then endless experimentation is resorted to in order to prevent the exhaust gases from being whirled to the deck by the inevitable eddies abaft the stack. Increased height, extension of inner stacks, the fitting of fins, louvres, blowers and gadgets can be make-shift solutions at best. The logical answer is to design the stacks for their function of carrying away the smoke—with ample height and minimum diameter. The owner's insignia can be carried on a deckhouse side. As for the appearance of the ship, instead of detracting many feel that this type of design enhances the beauty of the ship. (See picture on page 45.)

In less obvious ways throughout the ship emphasis on function will lead to more economical design. For example, the consideration of items (1) and (4) together will lead to an efficient correlation of the hull piping and ventilation systems with the structure of the ship. Consideration of items (1) and (2) together may justify the conventional amidship location of machinery in a passenger-cargo ship, but in a ship in which cargo is of primary importance, the emphasis on item (2) leads to a location of machinery well aft—as in the C-4 and C1-M-AV1 type cargo ships, for example. The best overall design is obtained when all functions of the ship are equally considered at all stages of the design.

Such emphasis on function need not lead to a sacrifice of appearance, either externally or in the interiors. Even though the technical requirements of function should be given first consideration, there is always sufficient latitude to permit harmonious balance of elements and pleasing selection of details.

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Experience Operating Diesel Tankers

(Continued from Page 34)

conditions for the men in the engine department, and throughout the ship a happier and more congenial spirit prevails as a result. To support this statement is the fact that in our small fleet there is a small and almost non-existent turnover of ships' personnel. It is not at all unusual to find on the small vessels, licensed officers and unlicensed men with over fifteen years continuous service on board. The present day design small horsepower Diesel engine, which has been reduced so materially in weight over recent years, requires only a small space for complete installation and thus permits a large percentage of the tonnage of the vessel to be allocated to the transportation of cargo, which is important. There are no extra large, space taking units required in a diesel engine installation, and as a result there is abundant space available for cargo tanks. We do not install boilers in our small Diesel powered tankers. This saving of weight is important, since on account of loadline requirements, any unnecessary weight involved in machinery installation would necessarily be taken from the amount of cargo that might otherwise be carried. Since Tide Water Associated is engaged in the highly competitive petroleum business, every effort must be made to operate vessels efficiently, reduce cargo carrying costs to the minimum consistent with good, safe vessel operation, and thus keep down overhead expense for transportation.

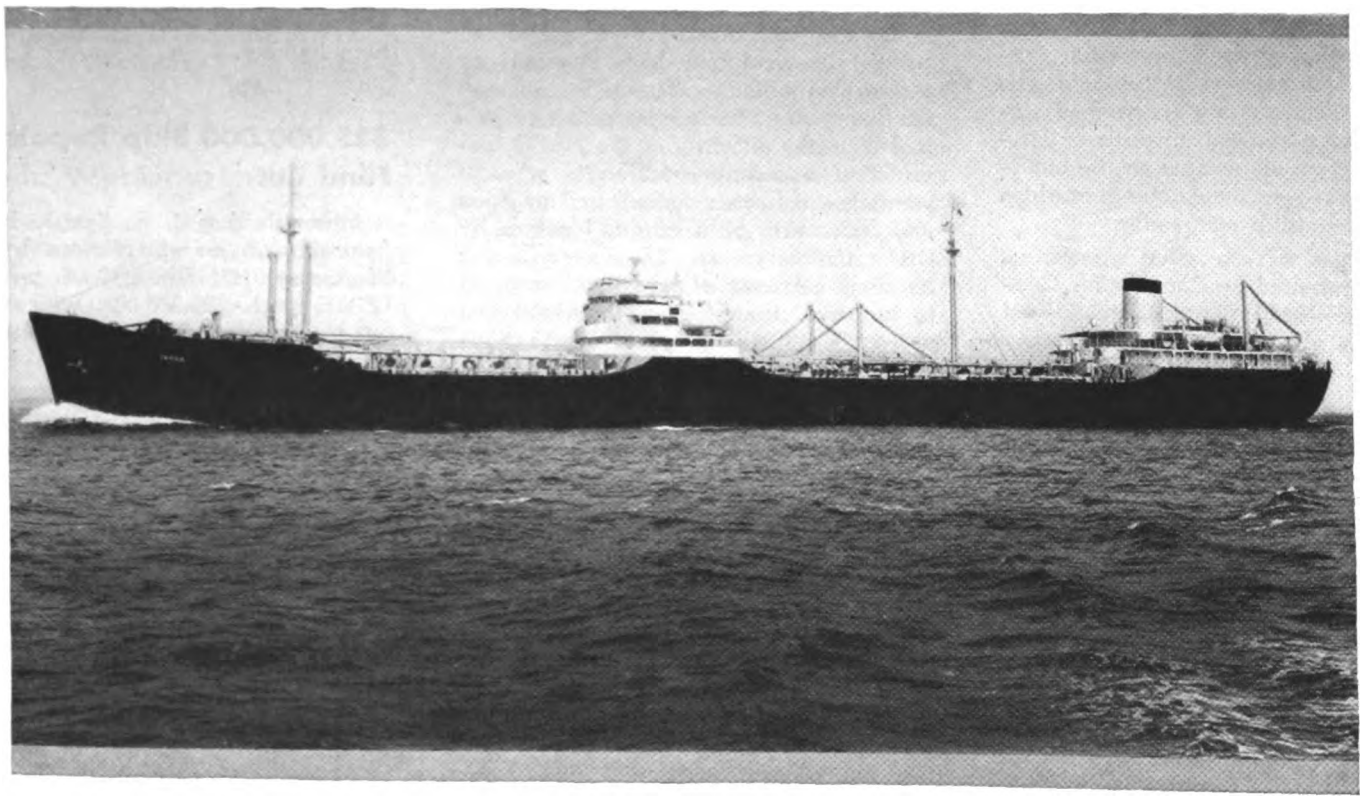
With respect to Diesel auxiliaries, a small but nevertheless important factor in operation is that only one unit is usually required as an auxiliary to supply electrical energy when the ship is under way. Both units are operated in parallel only

(Continued on Page 58)



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SUPERTANKER



Again the Choice is a Foster Wheeler "D" Type Steam Generator

The 28,000-ton S. S. Jahra, shown above, is a sister ship of the supertanker S. S. Burgan. Trial results on these ships show that the Foster Wheeler steam generators exceed their guaranties. The stack temperature at normal load was less than 300 F.

Supertankers in this class are designed to develop 13,750 hp and carry a liquid cargo of 223,707 bbls.

Foster Wheeler "D" type steam generators have been chosen for a succession of supertankers already launched or under construction.

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WASHINGTON Reporting

By The LOG's Own Correspondents

USMC Condemned But May Yet Have Its 'Day in Court'

As was expected by a few, but which came as a surprise to many and to the chagrin of the USMC, the Hardy Subcommittee (of the House Committee on Expenditures in Executive Departments) scathingly rebuked the Commission (except for Commissioner McKeough who was almost held up as a paragon of virtue) for having allowed upwards of $25,000,000 in excess allowances on the building of six passenger and combination ships for three steamship companies.

The charges of excessive allowances were first presented by Comptroller General Warren, and Commissioners first heard of the allegations via the press.

Also expected by a few, but which came as a shock to most, was the complete absence in the Subcommittee report of any of the explanations offered by Commission, Navy and other witnesses, seeming to bear out USMC Chairman Fleming's remarks at the close of the hearings that they appeared to be more of a prosecution than an investigation to determine the facts.

One Subcommittee member, Rep. Hoffman (R. Mich.) even suggested the Commissioners (except, of course, Commissioner McKeough) be removed from office or the Commission abolished.

While bearing out and stamping with approval practically all of the Comptroller's allegations, the Subcommittee did repeat in its report its wholehearted endorsement of the maintenance of a strong Merchant Marine "consistent with budgetary limitations and with the policy of a maximum economic investment of private capital."

Among other recommendations, the Subcommittee report urged immediate review by the House Merchant Marine & Fisheries of the 1936 Merchant Marine Act and its administration. In that respect informed quarters expressed the belief that the USMC would "have its day in court," and that perhaps even Rep. Hardy may be asked to answer questions with respect to the hearings he supervised. On the other hand, it was also reported that when the matter comes before HMM&F Committee, the ranking minority member, Rep. Weichel, may pursue the same type of investigation as that of the Hardy Subcommittee.

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Long Range Legislative Program Held Over

As Congress drew to its weary end in late October, the Long Range Legislative Shipping Program remained on the active House Calendar, ready for action when Congress reconvenes in January. The HMM&F Committee favorable report on the Bill, H. R. 5346 reached the Speaker too late in time to have the Rules Committee grant a rule so that it could proceed to the floor before adjournment.

The long delays however in the earlier part of the year may have stymied any active shipbuilding program for at least another year. The delays were due primarily to the difficulty of the AASO formulating a definite position of what it wanted, and further complicated by open and undercover criticism and blocking by CIO maritime groups. These same tactics by some elements of labor are expected to be used if and when the legislative proposals come before the Senate, specifically before the Magnuson Subcommittee of Senate Interstate & Foreign Commerce.

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New Awareness by Congress To American-Flag Shipping

The Congressional windup, which appeared to some like a group of poker players finally agreeing to call it quits after an all-night game, left American shipping in far better condition from the standpoint of Government paternalism, than at any time since the end of the war.

On the negative side, shipping felt frustrated that its Long Range Legislative Shipping Program had not been enacted, or War Risk Insurance provisions adopted, as well as numerous lesser but important pieces of legislation.

On the positive side however, possibly hundreds of millions of dollars in back pay claims were avoided by passage of the "Overtime-on-Overtime" legislation, to the benefit of shipowners, stevedores, Army, Navy and Maritime Commission.

In addition, the ECA Act was buttressed with an even stronger clause that American flag ships carry at least 50% of ECA-financed cargoes. Almost at the end of the Congress, when the Military Aid Program was passed, a clause even stronger than the ECA 50% provision was inserted in the MAP program, designed to specifically aid commercial U. S. flag ships.

The 50% clauses in what now appear to be the biggest and most important Acts of Congress in 1949 clearly portend the increasing importance with which the Congress views the American Merchant Marine. At this writing it appears the Second Session of the 81st Congress will be equally, or perhaps more greatly, concerned with the necessity for a strong American Merchant Marine.

Prototype Ship Construction Awarded to Ingalls

The Ingalls Shipbuilding Corporation, low bidder, received the construction contract to build a single screw, prototype cargo vessel, designed to be the basic model for large scale merchant shipbuilding in any future national emergency, from the USMC.

Ingalls bid was $4,744,000 on an adjusted price basis for the 477 feet, 6 inches overall length; beam of 66 feet; normal shaft horsepower of 12,500 to provide a sustained speed of 18.5 knots. The vessel will be of 10,500 dwt and will have 5 holds with single hatches instead of twin hatches.

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$25,000,000 Ship Repair Fund Cut

Although the U. S. Senate had voted favorably on an amendment by Senator Magnuson (D. Wash.) to provide the USMC with $25,000,000 with which to put into ready condition 134 ships of the National Defense Reserve Fleet, the amount was eliminated in a conference between Senate and House Conferees from the Supplemental Appropriation Bill.

Observers stated that the funds were cut at the insistence of the House Conferees, principally by Rep. Cannon, (D. Mo.). It was reported that no Bureau of the Budget estimates had been attached to Senator Magnuson's amendment, and that it is customary procedure that such estimates must be attached when one branch of the Congress, in this instance the House, has not acted upon that amendment for funds, when the matter goes to joint Senate-House Conference.

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ECA Demands Fulfilment 50% Clause by Foreign Nations

After determining that some Marshall Plan countries had failed to maintain American flag vessel participation in ECA liner cargoes at the required percentage during the second quarter of 1949, ECA cracked down hard by disallowing financing of more than 48,000 tons of cargo. Further, it put all Marshall Plan nations on notice that ECA would henceforth issue rules and regulations providing for strict compliance with the 50% clause of the Act.

The action of the ECA brought commendation from Rep. Hart (D. N. J.) Chairman of the Special Subcommittee (watchdog) set up by HMM&F Committee Chairman S. O. Bland to observe such transactions. At the same time Mr. Hart told Colonel Arthur G. Syran, ECA's Director of Transportation, "there is still room for substantial improvement," insofar as participation by U. S. liners is concerned.

ECA records showed that, on an overall basis for liner, tanker and bulk car-

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WASHINGTON Roundup

goes, more than 50% of the tonnage was carried in U. S. Flag vessels for the second quarter. However the ECA law as amended in April, 1949, requires U. S. Flag vessels carry at least 50% of ECA-financed goods in each of the three categories. The average for the three months showed tramp or dry bulk at 59.4%; tanker, 55.3% and liner, 47%.

Tonnages disallowed and countries involved were: Denmark, 13,599; Sweden, 726; Ireland, 2,661; United Kingdom, 13,068; Belgium-Luxembourg, 2,032; France, 11,179 and Netherlands, 5,130; total, 48,395 tons.

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Heard in Washington

That the shipping industry is supporting a proposed FCC rule establishing a new class of commercial radio operator license to be titled Radiotelephone Third Class Operator License . . .

That Samuel Duvall Schell, NFAS V-P, has been elected V-P and Director of National Defense Transportation Assn. and will seek new awareness by that group of importance of American shipping . . .

That cotton which has been moving to Japan in foreign flag vessels will henceforth be routed on U. S. Flag ships . . .

That ranking minority member of HMM&F Rep. Alvin Weichel, (R. O.) wants a complete probe into USMC and WSA wartime insurance dealings before Congress enacts any war risk insurance legislation . . .

That Rep. Charles Potter, (R. Mich.) has proposed a six man commission, three each from Canada and the U. S. to make a study of Great Lake shipping needs . . .

That the proposed USMC information and education program will entail about 25 staff members and funds of approximately $500,000 to promote U. S. Flag shipping . . .

That USMC will not seek extension of the present law allowing it to charter ships after next June 30, except in unusual cases where the national interest may be affected.

That Colonel Charles A. Miller, former Chief of Ocean Traffic Cargo Branch in Transportation Office of Dept. of Army, has been named to the HMM&F Committee staff to aid in the special merchant marine studies now underway.

That Chairman S. O. Bland of HMM&F Committee will investigate during the recess the report of the Hardy Subcommittee, and will ask Rep. Hardy himself to appear as well as other members of Mr. Hardy's Subcommittee.

That NFAS may shortly exchange with certain European shipowner associations operation expenses as well as construction cost data. Also that the USMC may exchange similar data with the Italian Government through the Minister in Charge of Merchant Marine.

That the Export-Import Bank is now making a regular practice of requiring in its Loan Agreements a commitment by the borrowing nation that all commodities purchased with the proceeds of the loan shall move in U. S. Flag vessels unless a waiver is obtained through the USMC.

That Prof. William Seward of Yale University is almost completed with a study on the status of maritime training for the shipping industry, upon which they will formulate policies with regard to government training of officers and seamen in the future.

That The American Legion, National Headquarters, will begin distributing (only to top ranking Legion officials) on January 1, 1950, a four page slick newspaper to be called Merchant Marine Bulletin.

That Association of American Railroads is sending a committee to Europe to study nationalization of transportation there, and has invited representatives of NFAS to join the Committee, and that NFAS's pool of representatives in Europe (officials of American lines stations in Germany and England) will cooperate.

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REP. ALVIN WEICHEL . . . wants a complete probe into USMC and WSA wartime insurance dealings.



Transportation Department Urged

Washington maritime officials saw in the recently recommended Federal Department of Transportation by two staff members of the Brookings Institution, a new drive to amalgamate all transportation under one roof, and an indication that new legislation will be introduced into the second session of the 81st Congress to implement such recommendations in January.

The study, authorized by Charles L. Dearing and Wilfred Owen who recently directed the Hoover Commission task force on transportation, recommends a major overhauling of Congressional policy and a reorganization of Federal agencies so that air, rail, highway and water transportation would be under one Federal Department with a Secretary of Cabinet rank.

According to the study, the present dispersion of regulatory authority among ICC, CAB and USMC would be corrected by establishing a new Transport Regulatory Commission to regulate all transportation.

Another step advocated by the study would be the elimination of unnecessary subsidies, it being pointed out that nearly a billion a year is now being spent by the Federal Government for highways, waterways, airways, airports, and for direct aid to airline and ship operators.

The study also recommended the restoration to management of a larger measure of discretion in determining rate levels, holding that regulatory agencies are ill-adapted to the exercise of managerial functions and cannot "be held responsible for decisions that prove financially injurious to the regulated industries."

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Maritime Commission Changes In Personnel

A reorganization announcement affecting several bureaus and divisions of the United States Maritime Commission, involving a number of important reassignments of personnel, was issued at the direction of Major General Philip B. Fleming, Chairman of the Commission, by Charles D. Marshall, general manager.

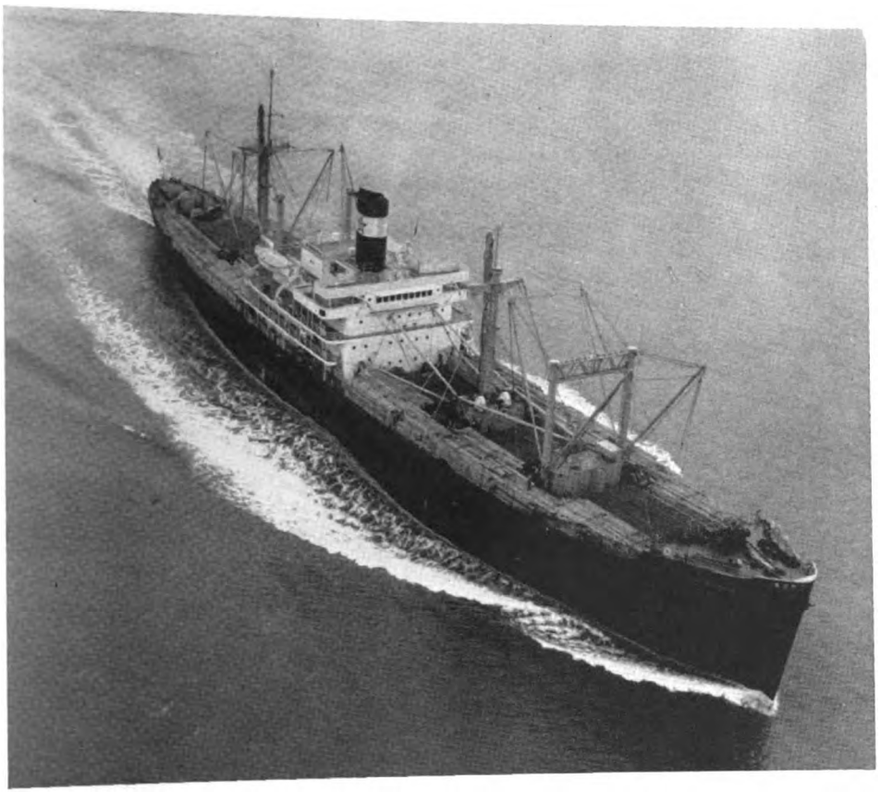
The changes are as follows:

The Bureau of Management is abolished and its chief, Ward B. Freeman, is assigned to the position of operations examiner in the Bureau of Government Aids. Two of the divisions of the Bureau of Management report now to the general manager's office. They are the Division of Personnel, whose chief, Clyde L. Miller, becomes director of personnel; and the Division of the Budget, whose chief, H. B. Hochfeld, becomes budget officer. The Division of Office Services, George A. Viehmann, chief, is transferred to a newly established Bureau of General Services. The Planning Office, headed by Edison Montgomery, becomes part of the general manager's office.

The Bureau of Marine Operations, headed by Frank E. Hickey, chief, is abolished. There is established a Bureau of Vessel Custody, the chief of which is Ernest W. Gorman, formerly chief of the Division of Reserve Fleet of the Bureau of Marine Operations. Under the Bureau of Vessel Custody will be a Division of Vessel Operations, M. I. Goodman, chief; a Division of Vessel Preservation, Henry Samara, chief; and a Division of Fleet Operations, Maurice F. Dineen, chief.

A Bureau of General Services is also established, headed by Harold E. Steffes, formerly chief of the Division of Supply of the Bureau of Marine Operations. The Bureau of General Services includes a Division of Purchase and Sales, Frank E. Hickey, chief; a Division of Property Management, Howard J. Marsden, chief; and the Division of Office Services headed by Mr. Viehmann.

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CENTENNIAL YEAR FOR POPE & TALBOT

California this year is celebrating its Gold Rush Centennial and, simultaneously, the well-known large western lumber and shipping firm of Pope & Talbot, Inc. is observing its 100th birthday, having been founded a century ago this month, on December 3, 1849, at San Francisco.

Two pioneers, Andrew J. Pope and Capt. William C. Talbot, members of early American families which had settled in the 17th century in the Massachusetts Bay Colony, launched the Pope & Talbot firm when they left their homes at East Machias, Maine, to join the gold rush to California and the far west.

With a cargo of Maine lumber, Captain Talbot skippered the wooden brig ORIENTAL around Cape Horn to San Francisco. This brig was the first of the Pope & Talbot fleet, which, during World War II, soared to a total of 76 vessels the company operated as agents for the War Shipping Administration, with a complement of 3,418 men. Eleven P&T ships were war losses.

Today the Pope & Talbot assets are listed at $29,000,000, representing vast holdings in lumber and shipping. The company's extensive holdings in the Pacific northwest total three big sawmills and more than 137,000 acres, which include great reserves of growing Douglas fir on tree farms, and its ships operate regularly on three routes—the Pacific Argentine Brazil line; the line from Pacific Coast ports to Puerto Rico and the Atlantic and Pacific intercoastal route.

Pope & Talbot Line today owns six C-3 vessels and a Victory ship, the most modern of their type, purchased at a cost of nearly $9,000,000, and operates these and other chartered vessels. The ships are the P&T TRADER, P&T EXPLORER, P&T SEAFARER, P&T PATHFINDER, P&T NAVIGATOR, P&T FORESTER and the P&T ADVENTURER.

President of Pope & Talbot is George A. Pope, Jr., grandson of Andrew Pope, one of the founders, and son of the late George A. Pope, Sr., president in the 1930's. First vice president is Fred C. Talbot, grandson of the other founder, Captain William C. Talbot, and son of William H. Talbot.

E. N. W. Hunter, vice president, is assistant to Mr. Pope, and executive vice president is Charles L. Wheeler, once president of Rotary International. J. A. Paiva is secretary-treasurer and controller, and Hillman Lueddemann, Portland, is vice president and general manager of the company's lumber division.

Vice president and general manager of the steamship division—the Pope & Talbot Lines—is Gerald A. Dundon. John A. Stein is freight traffic manager, E. A. Harms operating manager and C. L. Buell assistant operating manager.

The company maintains branch offices in Seattle, Tacoma, Portland, Stockton, Oakland, Los Angeles, New York, Philadelphia, Pittsburgh, Baltimore, Norfolk, Detroit, Washington, San Juan, P. R. and in South American cities. Pope & Talbot Lines employ a total of 1,028 men and women of whom 578 are seagoing and 450 shoreside personnel.

GEORGE A. POPE, JR., President of the firm.



GERALD A. DUNDON, Vice President and General Manager of the Steamship Division.



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Get These "PLUS SAVINGS" with FUELKLEEN

Cut down mounting costs with economical, efficient Fuelkleen, which SAVES THREE WAYS! Here's how:



Maintain Time, Distance and Speed Schedules at LOWER STEAMING COSTS

Utmost fuel oil efficiency means greatest economy. You get top BTU efficiency from *clean* oil—and Fuelkleen is best for keeping oil cleanest. Fuelkleen's "PLUS" Combustion Action assures utmost fuel efficiency. Fuelkleen breaks up and dissipates sludge, foreign matter, oil-and-water emulsions; Fuelkleen'd oil assures greatest atomization and combustion, keeps rings and nozzles clean.



Minimize Tank Cleaning Costs and Time

Fuelkleen invariably eliminates the much greater required-time and cost of manual cleaning; often does the job for 5% of cost of manual cleaning; quickly dissolves dirt and gum deposits in tanks, pipe lines and preheaters. There's *no wasted oil,* no sludge removal problem.



Eliminate "At-Source" Repair and Maintenance Time and Expense

Do away with many of the *causes* of repair and maintenance; eliminate costs and lay-up time. Fuelkleen-treated oil protects against pitting and corrosion.

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

San Francisco Engineers Discuss Steam Atomizing Burners

Walter B. Hill, marine manager of C. C. Moore & Co., San Francisco, Pacific Coast representatives of The Babcock & Wilcox Co., discussed steam atomizing burners at the November meeting of The Society of Port Engineers, San Francisco and his talk was supplemented with a colored sound motion picture on steam power.

"Burning oil fuel in boilers dates back to about 1870, when vessels on the Caspian Sea and the River Volga began to appreciate its worth," Mr. Hill said. "It was not until around 1900 that oil began to be used extensively in this country.

"Steam atomization was the earliest successful method of burning oil. The inefficiency of the early steam atomizing burners and the successful development of a pressure atomizing burner made the old atomizing steam burners less popular. Up until a few years ago they were not used except for burning very heavy oils and residues from cracking processes. Recently, however, the steam atomizing burners have become increasingly popular. The type of oil sold in recent years and possibly modern boiler design, has caused formation of slag on superheater tubes requiring frequent outages and cleanings. The steam atomizing burners have reduced considerably the tendencies for building up this slag.

"Also, the present day steam atomizing burners as shown in the attached cut use about ¾% of the steam generated as atomizing steam. Atomizing steam is not all a direct loss as the steam soot blowers are used less frequently and less rpms per element on each blow. One ship using steam atomizers on this coast now blows tubes once every other day instead of twice a day and the color of the soot coming out of the stack is brownish rather than black. The smaller amount of soot means that the firesides are consistently cleaner producing a better heat transfer and efficiency. Further, the cleaner firesides considerably lessen the danger of soot fires in the economizer and air heater. Soot on deck is also reduced to a minimum.

"The much wider range of capacity of the steam atomizing burners is an added advantage. With the regular straight mechanical atomizing burners, the range of capacity from minimum to maximum on one size sprayer plate is about 2-1. With the so-called wide range plunger type or return flow type burners, the range of capacity is about 4-1. With steam atomizing burners a range of 10 to 15 to 1 is easily obtainable. This means that burners are not being cut in and out during maneuvering and a constant steam pressure can be maintained. On the ship previously mentioned, they normally maneuver with one burner in each boiler.

"Steam atomizing burners are suitable on either hand or automatic operation, as the fireman or control merely regulates the oil pressure as required and the atomizing steam pressure automatically follows at 20 psi higher than oil pressure. The steam pressure reaches a maximum at 130 psig but the oil pressure can go on up to its maximum, normally 300 psig, without further increase in steam pressure. Changing over from straight mechanical to Y-jet steam atomizing burners is not a major change. With Babcock & Wilcox burners, it means only changing an atomizer and coupling which can be changed in about fifteen minutes per burner. It is necessary to add an atomizing steam line, a differential valve in this line, and readjust the combustion control, if one is installed. Experience has demonstrated that on a C-3 type vessel atomizing steam consumption is about three to four tons per day. It is not claimed for the steam atomizing burners that periodic hand lancing is eliminated but it has been found that the frequency of the lancings and the amount of soot and slag removed is reduced considerably. From observations of results with steam atomizing burners, there is no question but that they will be found in increasing numbers in the future."

At the December meeting of the Society, Shell Development Co. will explain and demonstrate its "Probolog," an instrument for the non-destructive inspection of heat exchanger tubes.

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San Francisco Society Names 1950 Nominees

Ira Chapman, American President Lines, San Francisco, is the sole nominee for the 1950 presidency of The Society of Port Engineers, San Francisco, with James A. Stasek, Pacific Far East Lines, candidate for vice president. The election will be held at the January meeting.

Marshall T. J. Garlinger, MSTS, presided at the meeting of the nominating committee held in November. George H. Harlan, MSTS, was named to succeed himself as secretary-treasurer.

Two members were named to fill vacancies on the society's board of governors. They are M. C. Wright, Deconhil Shipping Co. and Joseph Gisler, J. F. Gisler Co.

Five candidates were named for four memberships on the board of governors. They are: H. Lee Kincaid, MSTS; Jack Butler, Gamlen Chemical Co.; William Reich, Grace Lines; Marshall T. J. Garlinger and R. E. Streiff, Pacific Tankers, the retiring president.

New Officers Elected by Los Angeles Port Engineers

At the regular monthly meeting of The Society of Port Engineers, Los Angeles, the election of officers for the ensuing year was the principal business in hand at the meeting and talks by Ray Sullivan of Hall Laboratories on "Boiler Scale Problems in High-Pressure Boilers" and Bill Dorman, American Bureau of Shipping, recently returned from Argentine, on "Living Conditions Under a Dictatorship" added to the interest and entertainment.

Hamp Neergaard, officiating in the absence of Dan Dobler, read a prepared statement by Dan thanking the officers and members for their cooperation during his term in office as president.

Hamp Neergaard was elected president for the ensuing year and Ray Jones, General Petroleum Company, vice-president. Bert Hale was re-elected as secretary-treasurer.

Elected to the Board of Governors were R. L. Stakeman, Pacific Far East Lines, J. O. McDonald, General Petroleum Co. and Fred Cordes of Hillcone Steamship Company, replacing R. Cyrus, Union Oil Company, Paul Gaudin and Glenn Gulvin of American Pacific Steamship Co. Geo. Hoxie, American President Lines is the new Chairman of the Board of Governors.

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ABS Rule Changes Discussed At Seattle Engineers' Meeting

American Bureau of Shipping rules with special emphasis on recent changes were explained by S. K. Smith, principal surveyor, ABS, Seattle, at the October meeting of The Society of Port Engineers of Puget Sound.

Rule changes, he recorded, are the result of scanning many reports of the queer and unusual things which happen to ships, and recognition given to development of new construction techniques.

Discussing tail shaft failures he pointed out these occur among war built vessels far in excess of pre-war ships, and percentagewise as well as in numbers, far greater with Liberties than on other types.

He recorded: "One type of failure on Liberties indicated improper installation resulting in corrosion fatigue, and this type has now been decreased until it is currently under the average of other types of ships. It is believed this was accomplished by better fits and more careful sealing.

"The other type failure was hair line cracks on the driving side at forward end of the keyway. This indicated a possibility of torsional vibration trouble and General Electric Company, at our request, made torsigraph tests on a Luckenbach operated Liberty to find a third order critical which was considered might be the cause. To keep out of this critical it was recommended that the R.P.M. be decreased about ten revolutions to 66, unless the revolving mass condition was changed by fitting a flywheel, counterweights, or larger line shafting. The time of drawing the shaft was changed to two years, and

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other changes made. A result is that the percentage of failures has decreased.

"Experiments are underway at the Camden Forge Company to try to find out if the 66 percent ingot reduction started during the war to permit use of smaller ingots from which the shafts were forged might be the fault. The pre-war reduction was 80 percent.

"The so called welded type of structural failures switched from the Liberties to the T2 tankers about two years ago, and it is believed has been brought under control by fitting four or more crack arresters. The Liberties' serious failures had been practically stopped by fitting gunwale bars or straps, crack arresters and hatch corner alterations.

"Crank case explosions of oil engines has caused a change in the rules. The rules for the larger engines now call for breathers, suctions (not to exceed one inch of water); explosion relief doors or large valves, and the recommendation that warning signs be put on these engines suggesting that crank cases not be opened for at least ten minutes after shutting down, also a warning that a stalled or stalling engine should not be started again until the reason for stalling is known and evaluated."

He concluded with the statement that hull steel requirements have been drastically changed in plating over one-half inch.

Honor guests at The Society's October meeting were William T. Hayes, Joseph T. Hare, and James E. Saviski of the United States Maritime Commission. Ship repair friends of the Society also took part in the festivities which paid tribute to

(Continued on Page 60)

THE SOCIETY OF PORT ENGINEERS . . . PUGET SOUND—Top row, left to right: Honor Guests—JOSEPH T. HARE, WILLIAM T. HAYES, JAMES E. SAVISKI. Hare succeeded Hayes as port representative at Seattle, U. S. Maritime Commission, on October 31, 1949. Saviski heads the Portland office of the Maritime Commission. Clockwise: FRED I. NYSTROM, JR., International Shipping Company; CHARLES McMAHON, J. F. ZUMDIECK, Alaska Steamship Company; MERLE A. JOHNSTON, Olympic Steamship Company; E. A. BLACK, Commercial Ship Repair; GEORGE A. KING, JR., American Bureau of Shipping; J. L. HEARING, unattached; E. S. RAMEY, Luckenbach Steamship Company; DON BARTOSCH, HUGH D. NICKLE, Combustion Engineering-Superheater, Inc.

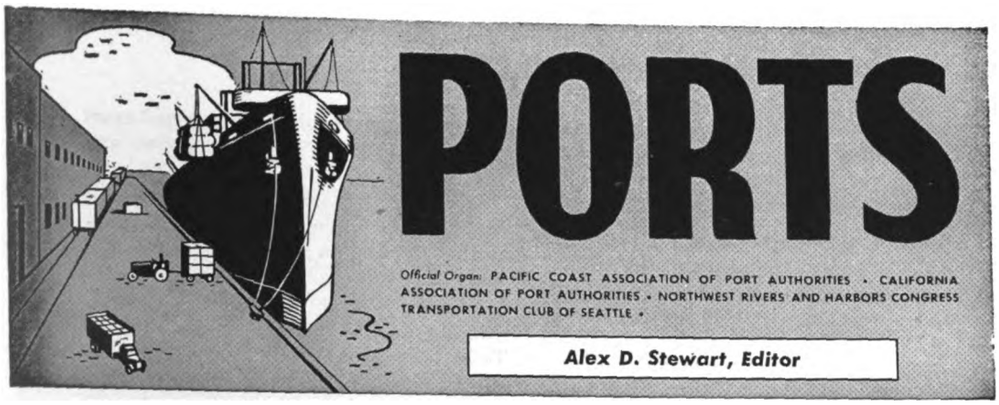
A Joe Williamson photo

SAN FRANCISCO—Second row, left to right: IRA CHAPMAN, APL, sole candidate for the 1950 presidency of the San Francisco Port Engineers' Society; WALTER B. "BUTCH" HILL talking at the San Francisco port engineers' meeting. In the foreground are WILLIAM OSBORN and AL PITTMAN, Hagan Corporation, and at Mr. Hill's right, in order, are JOSEPH F. GISLER, Joseph F. Gisler Co., MARSHALL T. J. GARLINGER, MSTS, RAY SAMPLE, Matson Navigation Co. and ED GRAFF, Grace Lines. WILLIAM C. HODGES and JOS. ZUBOFF, MSTS.

Third row, SAN FRANCISCO—continued, left to right: E. M. SWEITZER, States Steamship Co. and C. J. McKEEVER, General Petroleum Corp.; R. M. ELDEN, newly-appointed superintending engineer of Pacific Tankers, San Francisco. Mr. Elden has been a port engineer with this company for the past three years. THREE SHELL OIL MEN—left to right: JERRY LANDWEER, BARNEY KEATING and J. H. "HAM" MINNICK.



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PORTS

Official Organ: PACIFIC COAST ASSOCIATION OF PORT AUTHORITIES • CALIFORNIA ASSOCIATION OF PORT AUTHORITIES • NORTHWEST RIVERS AND HARBORS CONGRESS TRANSPORTATION CLUB OF SEATTLE •

Alex D. Stewart, Editor

Oakland Manager Heads National Port Executives

Arthur H. Abel, port manager and chief engineer of the Port of Oakland, was elected president and Leander I. Shelley, general counsel of the Port of New York was elected first vice president of the American Association of Port Authorities at the group's annual convention recently held in Milwaukee.

Mr. Abel is the second Oakland man to hold the presidency since the late G. B. Hegardt held the job in 1927-28. The last president to represent the West Coast served in 1945.

Associated with Hegardt in the formative years of the Oakland port, Mr. Abel has been with the port authority since its inception in 1926. For the past year, he has been vice president of the national body.

There is a possibility the 1950 national convention of the Association will be held in Oakland. The decision will be made by the directors next spring.

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Alcoa Increases Efficient Baltimore Port Facilities

The Alcoa Steamship Company has transferred its Baltimore port operations to one of the city's largest and best equipped piers. An Alcoa official said that the company has virtually terminated all business at Pier 5, Locust Point, and moved to the much larger, newly improved B & O Pier 9, Locust Point.

Behind the move to the much larger loading terminal, Alcoa said, is the fact that the company will give faster and more efficient service to its shippers, especially in the handling of package goods freight which requires covered warehouse space.

A spokesman for the Baltimore and Ohio Railroad, which owns the pier, reported that Alcoa has moved into its new location on the heels of a sum exceeding a quarter of a million dollars spent for improvements on Pier 9. A new marginal track 820 feet long has been added, fire wall openings have been enlarged and the latest type automatic doors installed, and drop skids, or ramps, have been built to span the interior railroad tracks and thus speed up and greatly increase cargo handling efficiency, according to B & O.

The Railroad said, too, that it has had installed at all twenty-four doors on the west side of the pier new sliding overhead curtains, which are so easily operated that they may be raised or lowered with one hand.

It was said that the flooring of about one-third of the warehouse with solid two inch oak lumber still remains on the improvement agenda. B & O added that at its new location Alcoa will have available many new pieces of equipment, including the latest designs in fork-lift tractors, and adequate Diesel switch engine power on a twenty-four hour basis.

In discussing some of the relative advantages gained by the move to Pier 9, Rex Wheeler, manager of Alcoa's Baltimore office, emphasized the company's most vital consideration for making the move. "In the past few years, while package freight has shown a steady increase, Alcoa has found itself with a shortage of covered warehouse space. Now, at Pier 9, we have approximately 90,000 square feet of such space, or about 200% more than was formerly available," Mr. Wheeler said.

"Alcoa begins operations at Pier 9," said Mr. Wheeler, "after many years of steady progress in its operations at the Port of Baltimore. We have doubled our regular sailings from here since 1936, and we are sure that the future will prove equally rewarding."

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New Orleans Appoints Garsaud Head of Industrial Facilities

Col. Marcel Garsaud, civil engineer and former general manager of the port, has been appointed director of industrial facilities by the Board of Port Commissioners, Port of New Orleans.

"The department is being organized by the Board to increase the development of its industrial areas at Michoud and the Industrial Canal," stated General Manager E. H. Lockenberg.

Col. Garsaud was general manager of the Board of Commissioners from 1926 to 1929 and again from 1940 to 1942.

Prior to his first term as general manager, he was chief engineer for the Orleans Levee Board. He prepared the original plans for lake-front development.

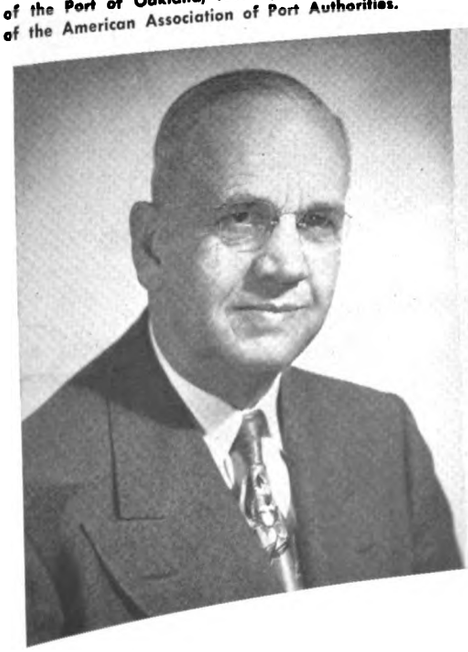
He acted as a consulting engineer from 1929-1940. In 1942 he entered active duty with the Army Transportation Corps, organizing the first Transportation Zone in the northeast states. He was director of the Dade County Port Authority at Miami, Florida from 1945 to 1948.

The establishment of the new department will incorporate the present industrial development division and the personnel of Michoud Industrial Facilities, owned by the Board of Port Commissioners.

ARTHUR H. ABEL, Port Manager and Chief Engineer of the Port of Oakland, recently elected President of the American Association of Port Authorities.

LEANDER I. SHELLEY, General Counsel of the Port of New York Authority, was elected First Vice President of the American Association of Port Authorities.

NEWLY Appointed Director of Industrial Facilities by the Board of Port Commissioners, Port of New Orleans . . . COL. MARCEL GARSAUD.







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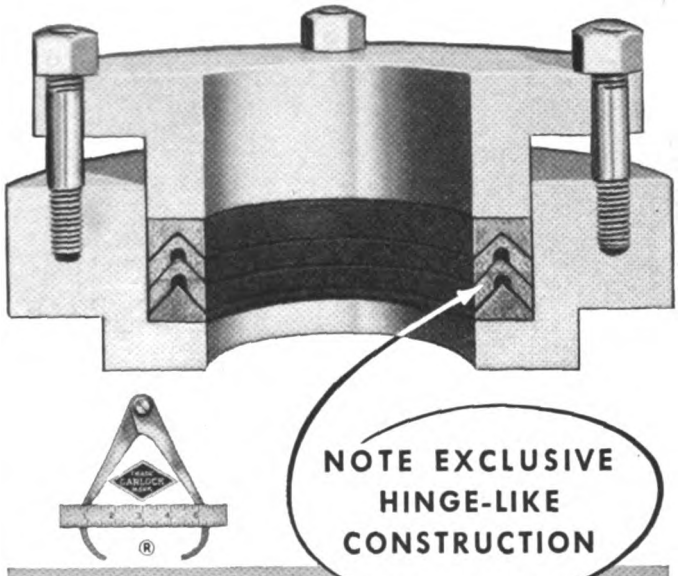
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Packaging Committee Reports On Activities

The packaging committee of The Maritime Association of the Port of New York, under the direction of James B. Young, vice president of Barber Steamship Lines, Inc., has completed the survey of outbound cargoes on twenty vessels in ten different foreign trade routes.

The outturn reports in connection with the test voyages have now been received to the extent that the work is about two-thirds complete. The committee is now undertaking to determine the form that the final report should take. The reports are so complete that it is a monumental piece of work and will take several months before a final report can be released.

Port of Seattle Repairs Many Legged Conveyor House

The accompanying picture may appear, at first glance, to show one of those giant insects that scientists tell us may inherit the earth.

Actually the subject is a seventy-eight foot high grain conveyor trestle now being reconstructed by Hall-Atwater Co., Contractors, for Port of Seattle at their Hanford Street grain terminal.

The trestle is a most important link in the loading of grain into ships for export. It was damaged to the danger point in Seattle's earthquake of April 13, 1949, at a time when the elevators were full to overflowing and a bumper crop of wheat was on its way west for Government shipment abroad.

In the emergency it was necessary to reconstruct the entire trestle under the conveyor house while the conveyor and grain spouts were in use. Under direction of G. T. Treadwell, chief engineer for Port of Seattle, the entire structure was cable guyed and timber braced temporarily for immediate use. Pipe scaffold was then erected for shoring while each of the seventeen bents of the trestle was entirely removed and replaced, and complete new rod and timber bracing systems were installed.

In addition to static and equipment loads, the rebuilt trestle is designed to resist winds of ninety miles per hour intensity and earthquake loads equal to eight percent of gravity.

Port of Stockton Carries On Largest Fumigation Operation

The largest fumigation operation of its type ever attempted on the Pacific Coast was carried on with 100% success at the Port of Stockton recently, reports the Port. According to E. E. Ferrari, director of the Port, the fumigation was accomplished in one complete transit shed of the local port and encompassed an area of 1,528,000 cubic feet.

Forty-seven fifty-pound cylinders of methyl bromide were used in the operation. N. A. Mclean, the operator of the company which supplied the fumigant, stated the Port of Stockton operation was the largest methyl bromide fumigation of its type ever carried on in the United States, and was unique in that an entire corrugated steel building was fumigated in one operation. Mclean went on to say that this fumigation job was the first ever done in this manner, that is, an entire steel shed sprayed as an isolated unit.

The cargo fumigated was a 425,000 bag consignment of 1948 government rice being temporarily stored at the Port of Stockton, awaiting shipment to a foreign country under an aid program. Port Director Ferrari stated that the rice cargo is cared for like any other grain cargo in storage at the port, and inasmuch as the rice will remain in the port's transit sheds for some time to come, the fumigation is necessary for preventative reasons.

In order to carry on the fumigation operation, more than 20,000 sq. ft. of nylon tarpaulin covering was used. The tarpaulin made the sides of the steel building virtually air tight, while the doors and overhead windows were sealed with masking tape and wet sawdust.

The fumigant remained in the transit shed from Saturday afternoon until the following Monday morning, when the operation was declared 100% successful.

New York Reports On Foreign Trade Zone

Commissioner G. Joseph Minetti of the Department of Marine and Aviation today delivered to Mayor O'Dwyer the twelfth annual report of operations at the New York Foreign Trade Zone, Staten Island, which the Commissioner has forwarded to the federal Foreign Trade Zones Board in Washington.

The City of New York as grantee of Foreign Trade Zone No. 1 reported that receipts into the zone and deliveries from the zone during the year 1948 aggregated approximately $190,000,000. Total receipts of cargo at the New York Zone were 95,982 long tons valued at $97,389,766 and the total shipments were 85,149 long tons valued at $92,173,060.

The value of the zone to importers is emphasized by the report indicating that importers brought more than 48,000 long tons of merchandise valued at nearly $51,000,000 into this country. This represents an increase of 15 per cent over the year 1947 and establishes the year 1948 as the greatest year for imports through the zone since 1941.

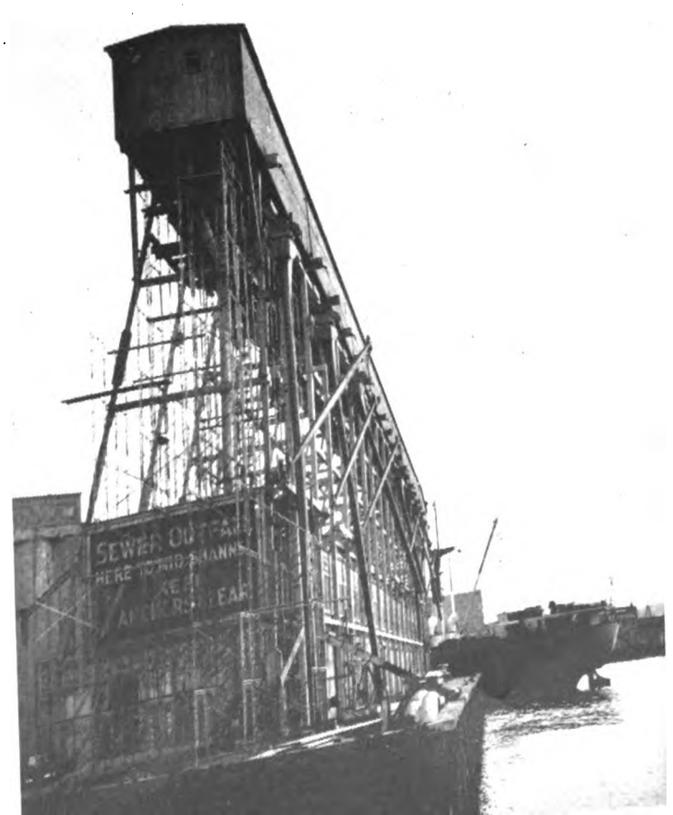
Port of Portland Leases Navy Dry Dock

The Port of Portland, Oregon, Commission has announced agreement with the Navy's bureau of yards and docks for the lease of Navy owned floating dry dock formerly under lease to Consolidated Builders, Inc. at Portland.

Subject to recapture in event of emergency the lease is for a five year period, with three five year options to permit continued operation. Consolidated Builders ceased operations and ended its lease with the Navy at the end of August.

As has been the practice with the dry docks owned by the Port of Portland the Navy dry dock under lease will be made available at established tariff rates to ship repair plants in the Columbia River area.

In the North Pacific use to be made of the Navy dry dock under lease to the Everett Pacific Shipbuilding and Dry Dock Company is being discussed. The Everett Pacific ceased operations on October 31. Repair plants in the Puget Sound area not owning dry docks are endeavoring to work out agreements for use of the facility on a tariff basis comparable to the arrangement in force at Portland.



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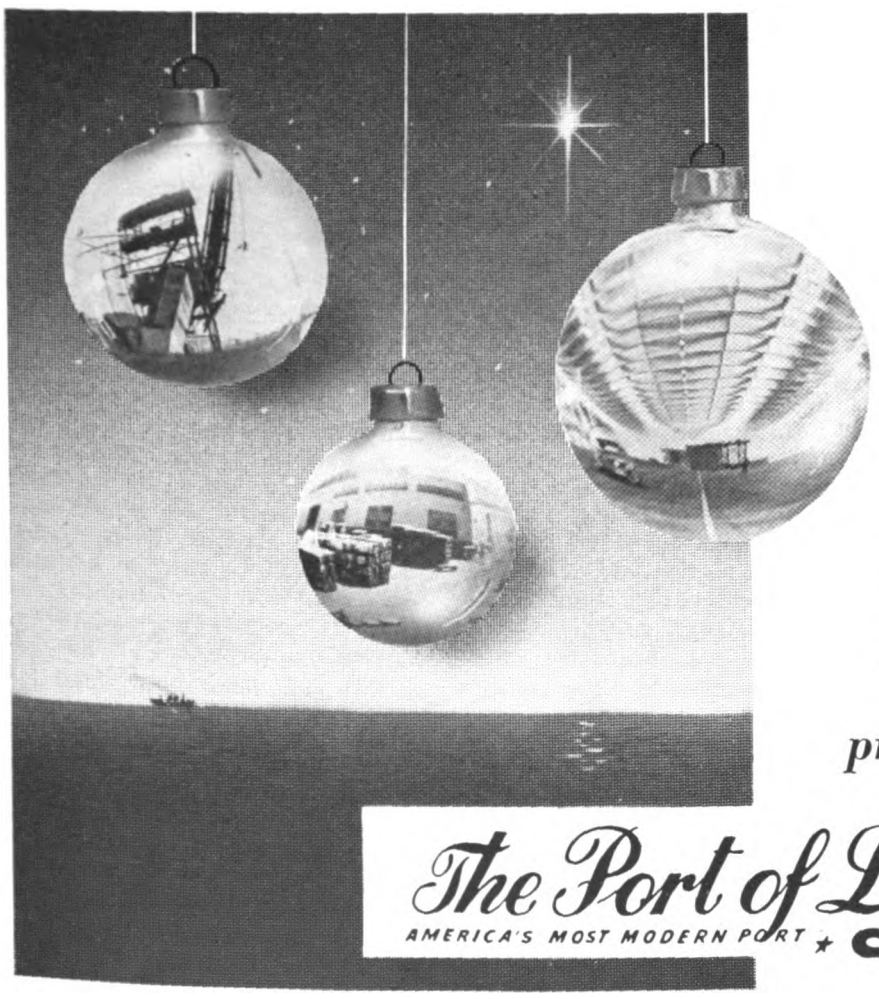
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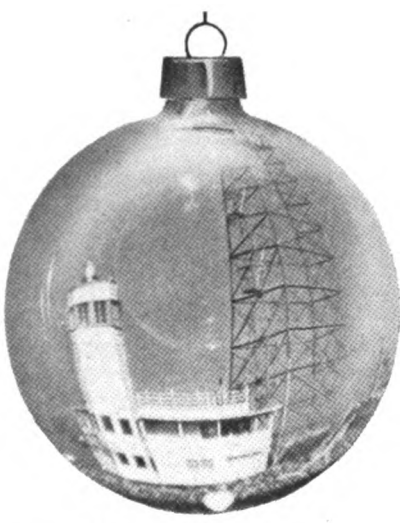
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Experience Operating Diesel Tankers

(Continued from Page 46)

when all cargo pumps are in operation at the same time, and the rest of the electrical load is at the maximum. In other words, there is usually a standby Diesel auxiliary unit available at all times. All auxiliary power, lighting, heating of quarters, galley and other requirements such as electrical urns, ranges, hot water units and navigation equipment are supplied by one Diesel generator. This is a large assignment for a comparatively small unit, not only in size but also in weight, compared with other generating machinery, and the Diesel generator accomplishes its task with minimum attendance of personnel and gives practically no mechanical trouble.

ROBERT H. MORSE, Jr., Chairman of the Diesel Engine Panel, President, Diesel Engine Manufacturers Association, and Vice President, Fairbanks, Morse & Company.



The established reputation of presently designed Diesel engines for reliability has been gained, of course, by good care, upkeep, periodic inspections and maintenance of all working parts. It is also dependent on a constant supply of good clean lubricating oil of high quality, and to this end all of our vessels are equipped either with a lube oil centrifuge or a modern cartridge-type filter. In an effort to secure this good maintenance, we stress vigilance on the part of all operating personnel, and a complete periodic physical report from the chief engineer of the vessel with respect to the condition of his department is submitted regularly.

All of the vessels in our small fleet operate on a varying schedule. Many different terminals are served by each vessel, and the hour of departure from the refinery and the discharging point is rarely at the same hour on different voyages. The ships sail immediately when loaded, or when a cargo has been discharged. As these operations are interrupted for various reasons, it is rather difficult to set, ahead of time, any definite time for sailing. Under these conditions Diesel engines are most convenient, since the vessels are ready to sail at a moment's notice without preliminary warm-up and without any stand-by consumption of fuel oil in the main engines, which is reflected in low operating costs.

Once under way from the pier the Diesel engine has instantaneous availability of full power. Some of our runs are short and it would not be practical to operate vessels with other than Diesel engines. Vessels are required which are economical on both short runs as well as on longer voyages. It can not be overemphasized that the petroleum business is highly competitive and any possible reduction in operating expense is important to an economy-minded management.

The bulk stations which these vessels serve are located near many of the principal cities on the Hudson River, along the Long Island Sound, and along the Atlantic Coast in the New England area. Several of these cities are smoke conscious, and were it not for our Diesel engines there undoubtedly would be instances of just complaints from smoke abatement committees of these various localities.

And now for a few words with respect to repairs. Once a year, according to present schedule, these vessels undergo complete shipyard dry docking and overhaul. Insofar as it is possible, all auxiliary units are overhauled throughout the year while the vessel is operating, as a result of which time and money in the shipyard can be concentrated on the main propulsion engines. However, during the year ship personnel, with occasional assistance in some instances of shipyard riggers, carry out the greater part of what periodic repairs to the main engine may be found necessary.

During the stay in shipyard the main Diesel engine is completely opened up for thorough examination, all pistons are withdrawn and examined in detail. Cylinder liners are "miked" for wear. Piston rings are checked and cleaned, and defective ones (usually the upper rings) are removed and renewed. Shaft bridge gauges and deflection readings are taken and recorded on a form provided for the purpose. All bearings are examined and adjusted as found necessary. Connecting rod bearings are checked for slackness.

The overhaul period lasts approximately from one week to ten days, at the end of which time the engine is given a dock trial of about four hours duration. Prior to that time, of course, in addition to attention to the main propulsion engine, all auxiliaries are opened up, examined, cleaned and checked carefully and worn or defective parts renewed. When a satisfactory dock trial has been rendered, the vessel returns to service. By thus undergoing a complete annual overhaul the ship acquires her Annual Inspection Certificate from the U. S. Coast Guard authorities and is also inspected by the Classification Society representative (American Bureau of Shipping).

I have been talking in general about the units of our small Diesel fleet, but now permit me to go into some detail and figures about one of our coastwise ships, viz., the ms TYDOL FLYING A, which is a T1 type vessel. The capacity of the vessel is approximately 31,000 barrels of petroleum products. The length of this ship is 325′ 2″, with a depth of 48′ 2″, and a loaded draft of 19′. The propelling machinery consists of a two cycle, six cylinder, 18″ x 25″ direct reversible Nordberg engine operating at about 112 R.P.M., which on a fuel consumption of approximately 45 barrels of Diesel fuel oil per day results in a speed ranging from 10½ to 11 knots. At this speed the vessel's engines develop approximately 1,450 B.H.P.

This ship was placed in service in March 1948 and since that time, a period of approximately 18 months, the vessel has transported over 5,000,000 barrels of products, principally from Bayonne to our waterside stations at Revere, Mass. and other New England terminals. During

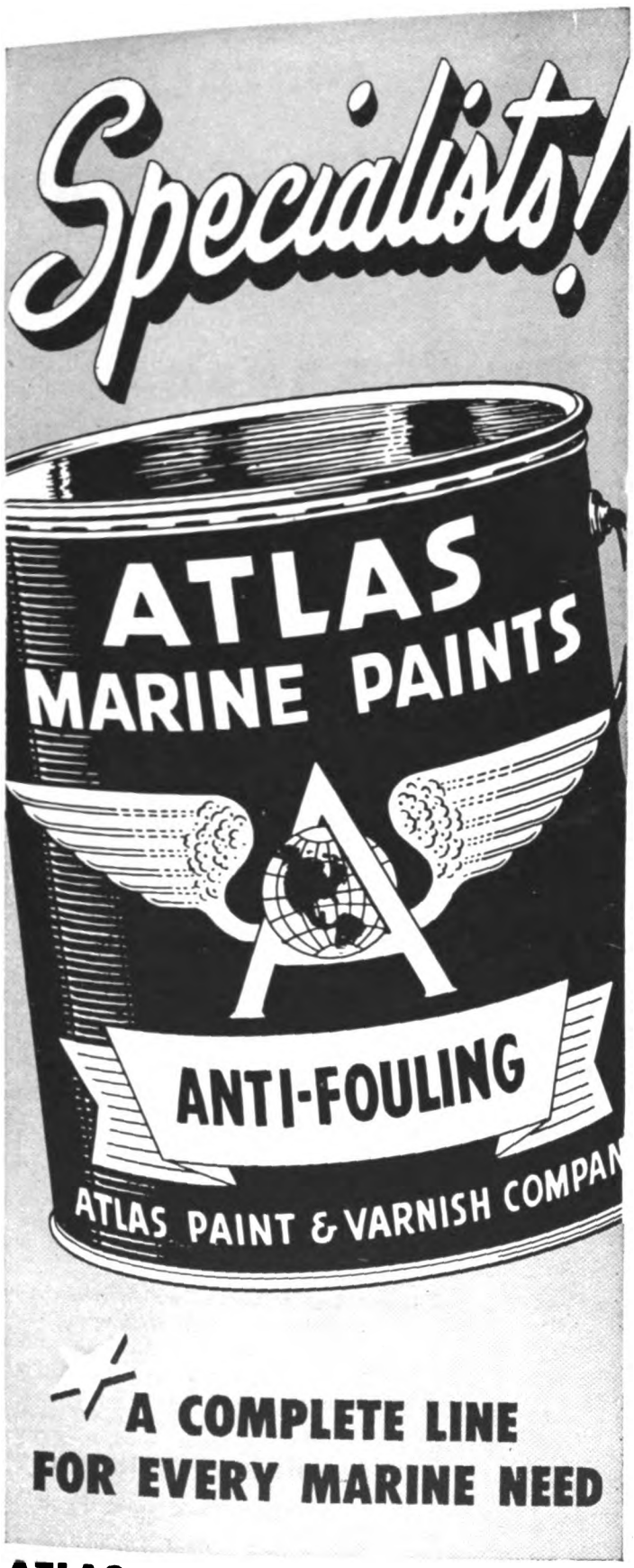
J. H. G. McCONECHY, Chief Engineer, Sun Shipbuilding Corp.



that period a total of about 150 voyages have been made and the vessel has regularly maintained this schedule without any machinery repair detentions so that in laying out the schedule of this vessel, our experience has taught us that no allowance need be made for machinery breakdowns to date. In addition to this important point of reliability is the fact that, as a result, maintenance costs are, in our opinion, at an absolute minimum.

Our experience with small Diesel engines as prime movers for vessels in our small fleet leads us to believe that a good decision was made when these vessels were acquired or built. Considerable credit must be given to the designers and manufacturers, who have not only decreased weight per horsepower, but have also constantly improved performance of the engines, and have built such reliable machinery. All concerned, in our opinion, may be justly proud of the standards achieved by the Diesel engine industry with respect to flexibility, dependability, economy and safety.

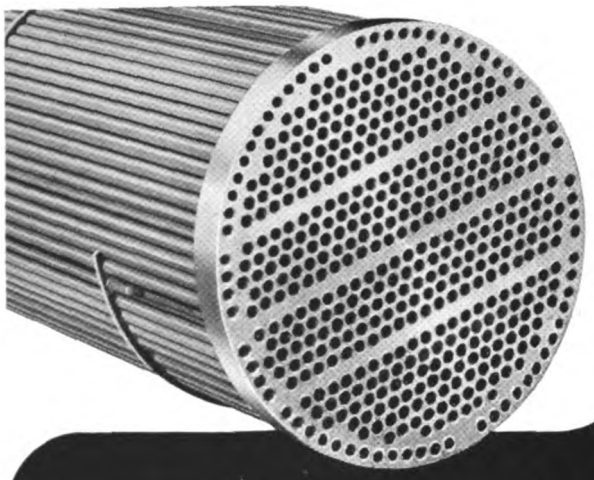
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Like former Type BCP units, the new design is of copper and copper alloy construction, recognized for its ability to resist marine corrosion . . . and being fully standardized in a carefully selected series of sizes, is promptly assembled for quick dispatch from mass produced parts carried in stock.

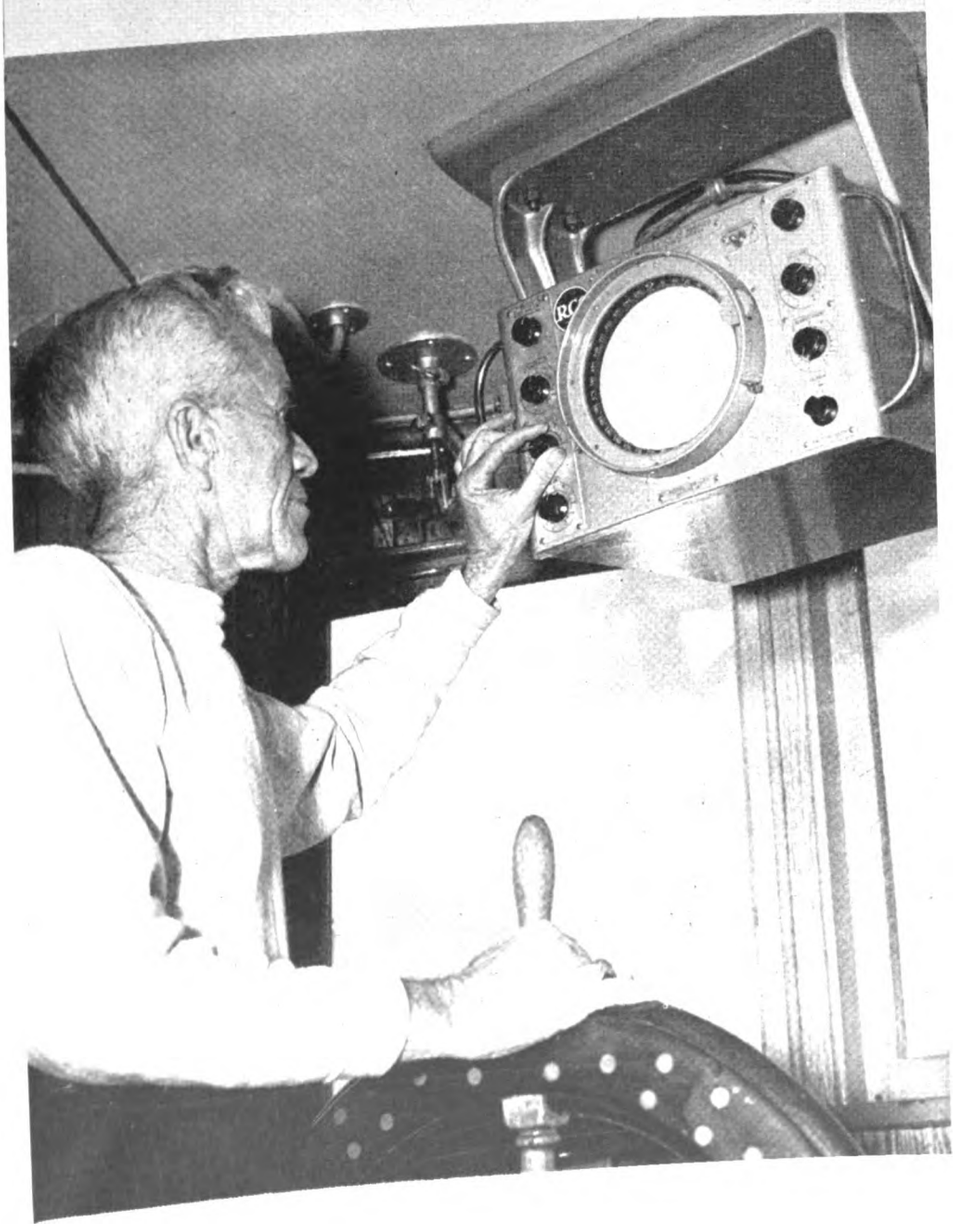
New Catalog No. 2.2K1 soon available. Write ROSS HEATER & MFG. CO., INC., Div. of American Radiator & Standard Sanitary Corp., 1401 West Ave., Buffalo 13, N. Y. In Canada, Horton Steel Works, Ltd., Fort Erie, Ont.

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RADIOMARINE INSTALLS FIRST SMALL LOW COST RADAR

First installation of a new type, low cost small radar designed especially for small coastwise vessels, harbor craft, trawlers, fishing boats, ferries and yachts has been made aboard a McAllister Brothers tug in New York harbor, Thomas P. Wynkoop, president of Radiomarine Corporation of America, announces.

Despite its small size, Radiomarine's harbor craft radar, called the CR-103, has a 30 kilowatt transmitter. Operating on a wave length of 3.2 centimeters, it has the power and sensitivity to pick up ships or landmarks at 20 miles, or objects down to 75 yards from the antenna. The indicator is equipped with scales for 1, 3, 8 and 20 miles, calibrated in either statute or nautical miles.

One of the important features of the unit is its adaptability to ships' power supplies. The equipment can be supplied to operate from 24, 32, 115, 230 volts direct current or from 60 cycle alternating current of 115 or 230 volts.

The complete radar installation consists of three basic units, the indicator, the transmitter-receiver and the antenna assembly. The indicator can be compactly mounted either overhead, on a shelf, or table, or atop the transmitter-receiver cabinet, depending on the size and layout of the wheelhouse.

The antenna, which weighs only 150 pounds, is slotted throughout its 50 inch length to reduce wind drag, and all gears are enclosed in a weathertight aluminum casing.

↕ ↕ ↕

Seattle Port Engineers

(Continued from Page 53)

Hayes, and extended a welcome to Hare and to Saviski. Hayes retired as port representative of the Commission, at Seattle on October 31; Hare, transferred from San Pedro, succeeds him; and Saviski, head of Commission M. & R. at Portland, was invited to assist with the program.

CAPTAIN EDWARD C. CARPENTER of the tug McALLISTER BROS. adjusts indicator control of new low-cost Radiomarine radar, compactly designed for harbor craft, ferries and yachts.

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(Above) Seattle foreign traders inspect shipment of cigarette lighters brought to Seattle Foreign Trade Zone aboard Pan American Clipper from Tokyo, speedily meeting time requirements of South American markets.

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EQUIPMENTALK

Radiomarine Completes 200 Installations in 10 Months

The Radiomarine Corporation of America, a service of RCA, designers and manufacturers of the modern 3.2-centimeter shipboard radar aboard more than 200 vessels of the U. S. Army Transport Service, completed this mass installation in the brief period of 10 months, according to Thomas P. Wynkoop, president.

"This outstanding record was made possible by the fact that Radiomarine is mass producing this basic radar model, known as our commercial Model CR-101-A, for hundreds of American and foreign vessels," Mr. Wynkoop commented.

"Our established and experienced service organization enabled us to complete the radar installations as fast as ships became available in six continental United States ports, as well as in Puerto Rico, Canal Zone, Alaska and Hawaii," he added.

In the San Francisco area, Republic Electric Co. of that city installed forty of these radar units aboard the transport ships.

⚓ ⚓ ⚓

Gulf Oil Appoints D. R. Winter To Handle Transportation Sales

Daniel R. Winter has been appointed assistant general manager in charge of transportation sales for Gulf Oil Corporation, according to H. G. Meador, vice president of divisional sales.

Mr. Winter served until the present as manager of national account sales. In his new position, created as part of the firm's reorganized domestic marketing program, he will be responsible primarily for direct sales to railroads, airlines and steamship lines.

DANIEL R. WINTER, Assistant General Manager in Charge of Transportation Sales for Gulf Oil Corporation.



⚓ ⚓ ⚓

New Boiler-Tube Welding Process Developed

Combustion Engineering-Superheater, Inc. reported a new and simpler process for welding boiler tubes, which effects a large saving in time, has been developed at their Chattanooga, Tenn., plant. According to E. C. Chapman, chief metallurgist of the company, the new method not only provides these advantages of simplicity and time saving but also makes possible a consistently high quality of weld.

In many large modern boilers continuous tubes of lengths in excess of 100 feet are required, and to make them it is necessary to join two or more commercial lengths of tubing. The tube joints must have as much strength as the tubes themselves, in accordance with safety and boiler code requirements.

The company states the principles of induction heating and pressure welding are both employed in the new process which is used to make tube joints. A high frequency generator supplies power for the induction coil, the heating from which serves in effecting a pressure-type weld. A feature of the new apparatus is an enclosed atmosphere to protect the welding surfaces against oxidation during the heating period.

The company further reports that both straight and bent tubing may be welded by this method, which is expected to be less expensive and more uniform than hand welding and avoids the complications of internal cleaning that is required when flash welding is used. By combining induction heating and pressure welding, pressure-type welds may be made without objectionable upsetting of metal in the welding zone.

Tubes, drum hangar rods, and headers may be welded by this process reported by the company which is capable of handling materials ranging from 1 in. to 10 in. in diameter. Actual welding time is but a few seconds, depending upon the size of material. The use of backing rings is avoided, and welds may be made of one alloy steel to another or of alloy steel to carbon steel.

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Ross Produces Standardized Stainless Steel Exchanger

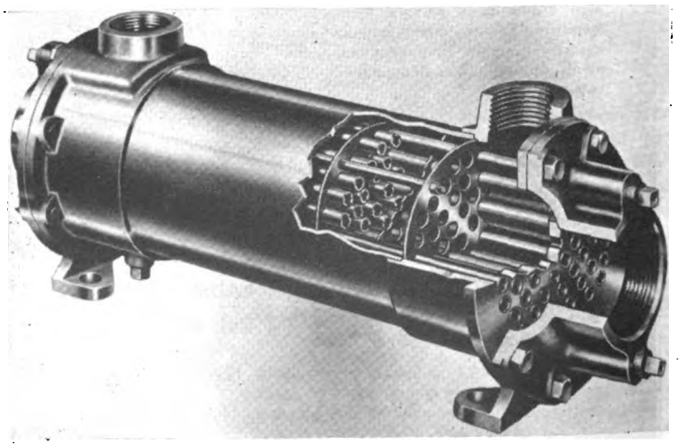
The first all-stainless steel heat exchanger to reach mass production is announced by Ross Heater & Mfg. Co., Inc., Buffalo 13, N. Y. Immediate delivery and low unit cost of this new model are made possible, states the manufacturer, by complete standardization and stocking of all component parts.

Identical in design and capacities to the well known Ross Type BCF exchangers which are all-copper and copper alloys, the new model, Type SSCF, utilizes stainless steel to avoid contamination of fluids or corrosion by fluids. The SSCF series incorporates all recent advancements in Ross thermal engineering, according to the manufacturer, and is offered in a complete range of sizes tested to 450 psi to withstand most strenuous usage. While type 316 stainless steel is standard, due to its almost universal acceptance in industry, SSCF Exchangers can be made also from any of the other well known types of stainless steel, although such special orders lose the benefit of immediate shipment.

Supplying complete data on the all-stainless steel exchangers the company announces a new 4-page bulletin No. 1.7K1. The new series designated Type SSCF, is described by photographs, line drawings and dimension tables in this 3-color, 8½ x 11 publication.

While the new bulletin will find wide use as reference material, sufficient information is provided to enable buyers to order immediately, according to the company.

Ross Heater & Mfg. Company's all-stainless steel heat exchanger, according to the manufacturer, the first to reach mass production.



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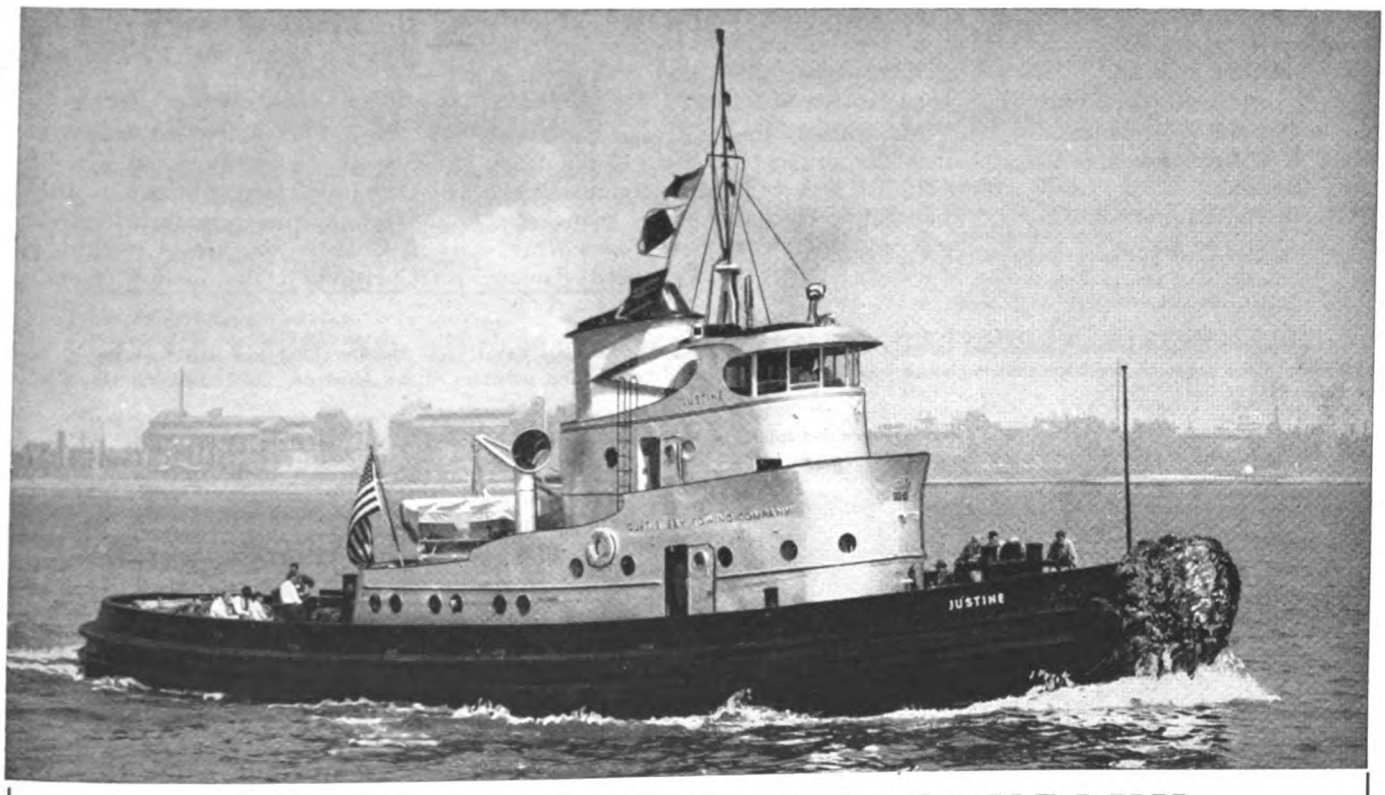
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LARRY RAPP, who rejoins C. C. Moore & Co., San Francisco, as assistant to Walter B. Hill, Marine Manager.

Larry Rapp Rejoins C. C. Moore & Co., Engineers

Larry Rapp, well-known on the San Francisco area waterfront, has returned to C. C. Moore & Co. Engineers, San Francisco, as assistant to Walter B. Hill, marine manager, with expanded responsibilities in both the stationary and industrial fields. Mr. Rapp formerly was with the Moore company for about five years, but has been in another line since last April.

C. C. Moore & Co. are representatives of The Babcock & Wilcox Co., and the Diamond Power Specialty Corp., Cochrane Corp., Northern Equipment Co., Airetool Mfg. Co., and The Dampney Co. of America.

REPORTS BUSINESS GOOD—Left to right: L. J. SAUERBORN, Milwaukee, owner of the Lubaid Company, and CHARLES W. BUTLER, San Francisco, Lubaid's Southwest District Manager. On a visit to San Francisco, where this picture was taken, Mr. Sauerborn reported national business very good in the marine industries Liquid Sootout, the company's original dual fuel treatment.



T.E.M.A. Publishes Book On Heat Exchangers

Standards of Tubular Exchanger Manufacturers Association, 1949 Edition, a 94-page, wire-o-bound book, has just been published by the Association, a group of eleven leading manufacturers of shell and tube sheet exchangers.

Of value to anyone concerned with the design, manufacture, specification, purchase, operation or maintenance of tubular exchangers, this comprehensive, profusely illustrated volume covers such subjects as: fabrication and performance; mechanical standards for petroleum refineries, commercial and general process applications; material specifications; fouling factors, temperature and temperature differences; heat transfer and pressure drop data; thermal properties of fluids; installation, operation and maintenance; characteristics of tubing.

This edition, the only one published since the original in 1941, is the work of the T.E.M.A. technical committee whose chairman is Thomas H. Miley, manager of heat exchanger department, Foster Wheeler Corp. Editor is Townsend Tinker, chief engineer of Ross Heater & Mfg. Co., Inc., Division of American Radiator & Standard Sanitary Corp.

Besides Foster Wheeler and Ross Heater, the other members of T.E.M.A. are: American Locomotive Co., Alco Products Division; The Griscom-Russell Co.; The M. W. Kellogg Co., Division of Pullman, Inc.; The Lummus Co.; Sweco, Southwestern Engineering Co. of California; Struthers Wells Corp.; Henry Vogt Machine Co.; Western Supply Co.; The Whitlock Manufacturing Co.

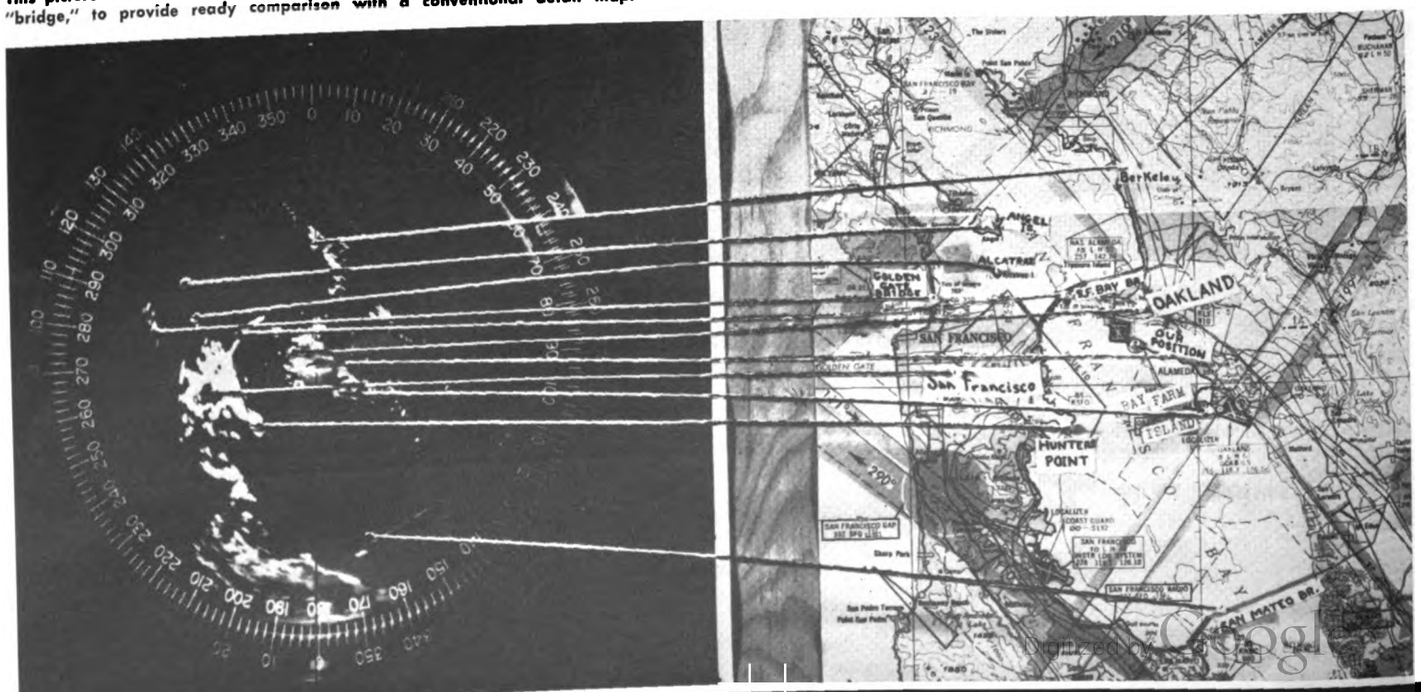
Copies of the book are obtainable at the Association's actual cost of $3.00 for paper cover editions and $4.00 for fabrikoid cover editions by writing George P. Byrne, Jr., Secy.-Treas., Tubular Exchanger Manufacturers Association, Inc., 53 Park Place, New York 7, N .Y. Distribution is not restricted to members.

↕ ↕ ↕

New San Francisco salesman for the Socony Paint Products Co. is Jas. F. Demarest, son of Captain R. O. Demarest, marine superintedent for Sudden & Christenson. He is working with Bert Christianer, the factory agent.

THE FIRST MERCHANT MARINE RADAR SET to be installed for training purposes by USMS on the West Coast . . . Familiar land and sea features of San Francisco Bay show up distinctly in the scope of the 3 cm. Westinghouse Type MU radar set used for training purposes at the Alameda, Calif., training school of the United States Maritime Service.

This picture shows how the radar "map"—known as a "Plan Position Indicator" or PPI—is mounted on a board directly in front of the radar set on the school's "bridge," to provide ready comparison with a conventional detail map.



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HIS MAJESTY, FREDERICK IX, King of Denmark, with AAGE HEMPEL at indicator of Raytheon Mariners Pathfinder radar shown at the recent Danish Ship Building Exposition. Mr. Hempel is the distributor of Raytheon's radar equipment in Denmark.

The "Skibet" or "Ship" theme was featured throughout the Exposition. Visitors were directed through a foyer arranged to show how a ship is built—from the first stage of construction. The main part of the exhibit consisted of a full-sized facsimile of a ship (above the water line). An aluminum wheelhouse was used. This wheelhouse will become part of a ship soon to be launched. Marine products exhibited by manufacturers were placed as near to their normal position aboard ship as possible.

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Super-Centrifuge Data Published by Sharples Corp.

Operating details, specifications and application data for the complete line of Sharples Super-Centrifuges has been released in a new bulletin published by The Sharples Corporation.

The new Super-Centrifuge bulletin includes basic information on the centrifuge principle, maximum utilization of centrifugal force, operating features, and specifications on all forms and models, both for general and specialized industrial application. Also included are details of Enbloc Purifiers, Laboratory and Portable Super-Centrifuges in open-type and Vaportite designs. Copies of this bulletin, No. 1248, are available upon request to The Sharples Corporation, 2343 Westmoreland St., Philadelphia 40, Pa.

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Colby Steel Announces New Organization

Mark R. Colby, president, Colby Steel and Engineering Company, Seattle, has announced organization of a new company, Colby Steel and Manufacturing Inc

Formed to carry on the principal activities of the original company the new firm is headed by M. S. Alexander as president; A. L. Senn as vice-president and general manager; C. D. Gould as vice-president and chief engineer; A. L. Senn, Jr., as secretary; and F. E. Wubbena, as treasurer. All have long been associated with the original firm.

Colby Steel and Engineering Company, headed by Colby, will continue in business, looking after other interests which have been acquired in the past 40 years. The two companies will be collaborating and jointly sharing offices in the Central Building. Colby has tersely described the rearrangement: "You will note I will be here in the office with the boys, but they will be heading up the show from now on out."

In its 40 year history the Colby organization has designed and installed cranes, marine elevators, and material handling equipment throughout the United States and Canada, and abroad. Hundreds of Colby cranes are installed in shipyards and on shipside terminals. Notable in the organization's achievements is the original and unique design of seven large double cantilever cranes running on the high trestles during the construction of Grand Coulee Dam. The span of these cranes is longer than a football field, 330 feet from point-to-point. They were balanced to travel on a 43 foot gauge track which permitted four lines of railroad to pass underneath.

Correction

In the list of equipment aboard the tanker ss JAHRA appearing on Page 43 of The LOG for November, it was incorrectly stated that Bludworth Marine supplied a "Fathometer."

The word "Fathometer" is the trademark of the Submarine Signal Division of Raytheon Manufacturing Company for their depth sounder.

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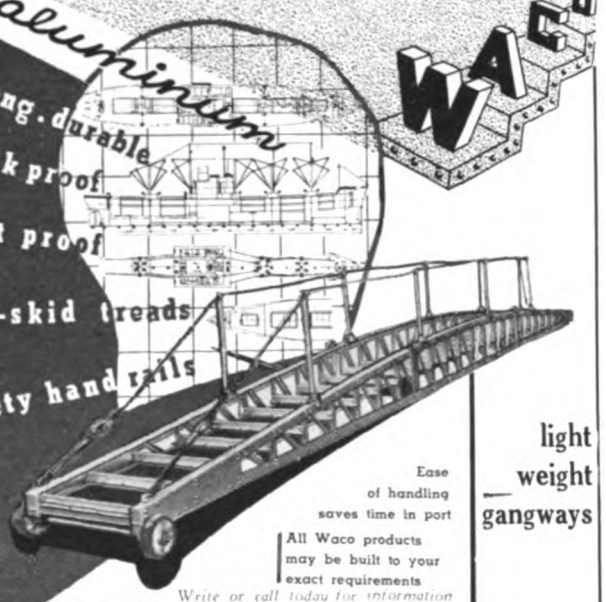
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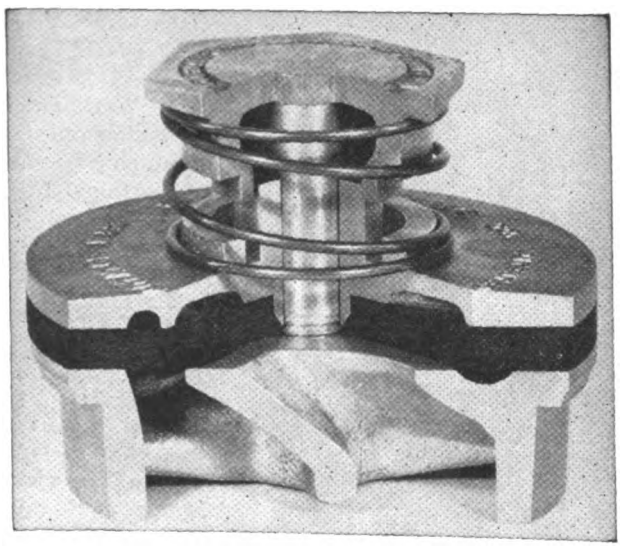
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Portland Firm Opens Seattle Office

Mar-Dustrial Sales and Service, Portland, has announced the opening of a Seattle office at 230 Bell Street Terminal under the management of V. A. "Vic" Hillman.

Until recently port engineer and technical advisor for the French purchasing commission stationed at Seattle, Hillman was with a Seattle ship chandlery firm from 1945 to 1948. During the war he was employed in supervisory capacity by ship repair plants in the Seattle area. Earlier he served as chief aboard Army Transport and Luckenbach vessels, following a start in a marine career in 1923 as fireman and oiler.

Mar-Dustrial Supplies and Services are marine representatives for Worthington Pump and Machinery Corporation, and represent numerous other marine lines, in addition to carrying full lines of Victory and Liberty ship spare parts.

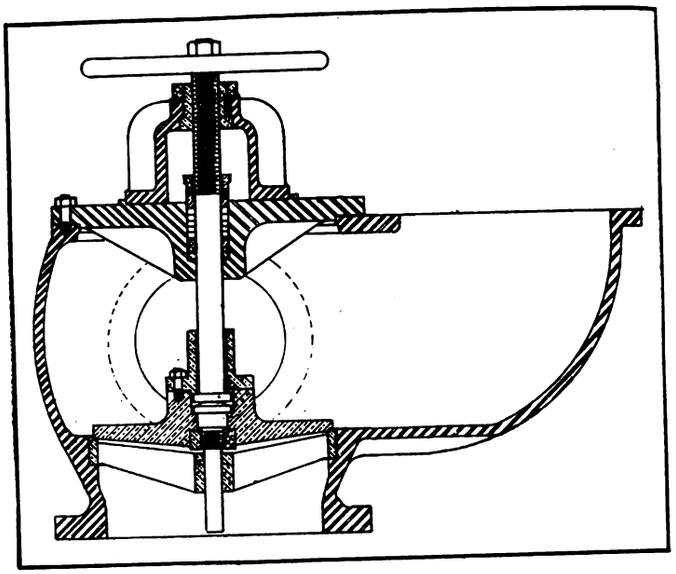
V. A. HILLMAN . . . Manager of the Seattle office of Mar-Dustrial Sales and Service, Portland.





J. D. CLARKE, recently appointed waterfront representative for Lake Union Drydock Company, Seattle.

DRAWING OF ANCHOR Equipment's new 26-inch main injection valve for T-2 tankers.



Worthington Announces West Coast Marine Repair Dealers

Worthington Pump and Machinery Corp. announces appointment of marine repair dealers in all four Pacific Coast major port areas.

They are:

LOS ANGELES-LONG BEACH — J. M. Costello Supply Co., 221 N. Avalon Boulevard, Wilmington, Cal.

SAN FRANCISCO — Anchor Equipment Co., Pier 3, San Francisco.

PORTLAND—Mar-Dustrial Sales and Service, Swan Island, Portland.

SEATTLE — Mar-Dustrial Sales and Service, Bell Street Terminal, Seattle. This outlet covers Alaska ports.

Stocks of Worthington marine repair parts are carried by these dealers. The arrangement with these three companies has been in effect for a number of months and Worthington officials report many complimentary comments on the service from ship operators and repair yards.

Worthington continues to maintain its sales offices in Seattle, San Francisco and Los Angeles, but the bulk of the repair parts will be carried by the marine repair dealers.

⚓ ⚓ ⚓

Clark

J. D. "Jim" Clarke was recently appointed waterfront representative for Lake Union Drydock Company, Seattle. Clarke was with Joshua Hendy Iron Works at Sunnyvale, California as general superintendent in charge of the Liberty ship engine program; later was port engineer for General Steamship Corporation and Mississippi Shipping Company at Seattle; with McGinitie and McDonald, Seattle marine surveyors, and with Commercial Ship Repair at San Francisco.

⚓ ⚓ ⚓

Anchor Equip. Manufactures 26" Main Injection Valves

Anchor Equipment Co., Pier Three, San Francisco, is manufacturing 26-inch main injection valves for T-2 tankers and can furnish them promptly, together with all important parts needed to be replaced. Normally, the Anchor people say, these big valves have been difficult to obtain on any of the nation's seaboards.

This valve was designed to serve a three-fold purpose of high and low suctions for the condensing unit and the fire pump and is so located it has to handle a large amount of air.

Earlier designs, it is pointed out, had several pockets which accumulated air, causing rapid corrosion to such an extent it was often necessary to replace the valves.

"This condition was brought to our attention," says Allen Scurfield of Anchor, "and, in redesigning the valve, these pockets were eliminated by streamlining the inner surfaces."

This 26-inch valve is large in size, weighing approximately 4,000 pounds, with dimensions of 6′ by 3′ by 4′. Replacement is costly. These new units have been installed lately on a number of tankers and, so far, it is reported have proved successful.

⚓ ⚓ ⚓

In the October issue of The LOG it was incorrectly stated that the five-bladed propeller, shown in a full-page illustration, was the first to be manufactured on the West Coast. It is learned that five-bladed propellers have been made in the past by the Doran Company, Oakland, the company which manufactured and finished the propeller shown in The LOG.

⚓ ⚓ ⚓

Canadian Representative For DeLaval Steam Turbine

DeLaval Steam Turbine Company of Trenton, New Jersey, have announced they are now being represented in Canada by The Superheater Co., Ltd. of Montreal, Canada (in conjunction with its affiliate, Combustion Engineering Corp., Ltd.).

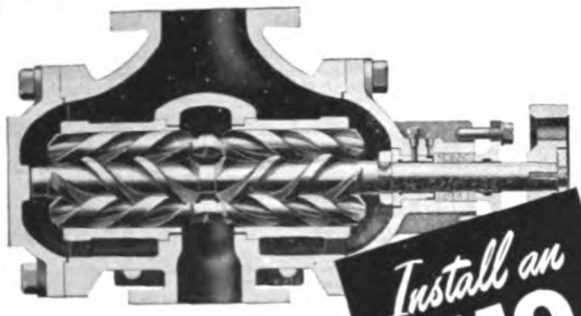
The Superheater Co., Ltd. will sell and service DeLaval turbines, pumps, gears and compressors in the Provinces of Newfoundland, New Brunswick, Nova Scotia, Prince Edward and Quebec.

⚓ ⚓ ⚓

Fred A. Finn, formerly with Commercial Ship Repair at Winslow, Seattle and San Francisco, has been named superintendent, Northwest Marine Repair, Seattle.

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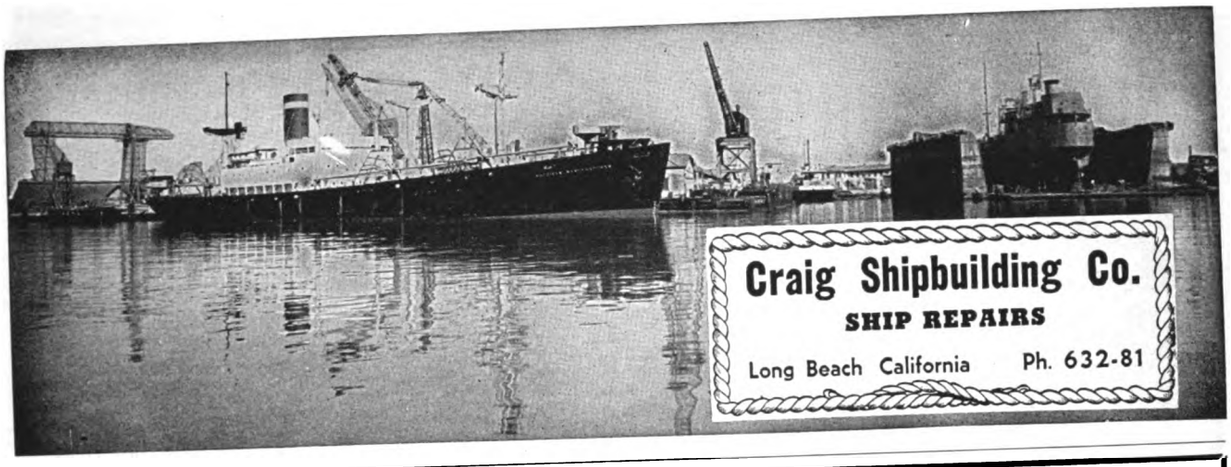
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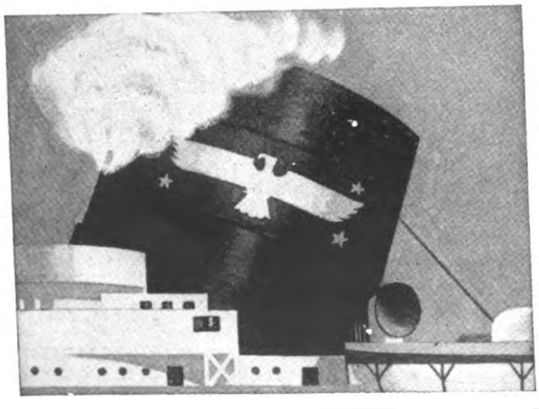
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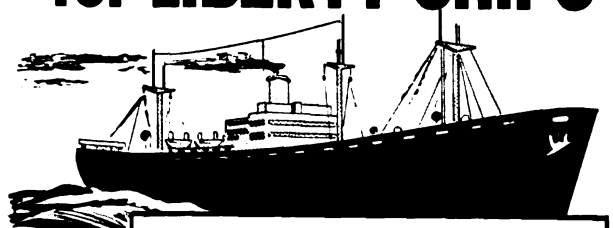
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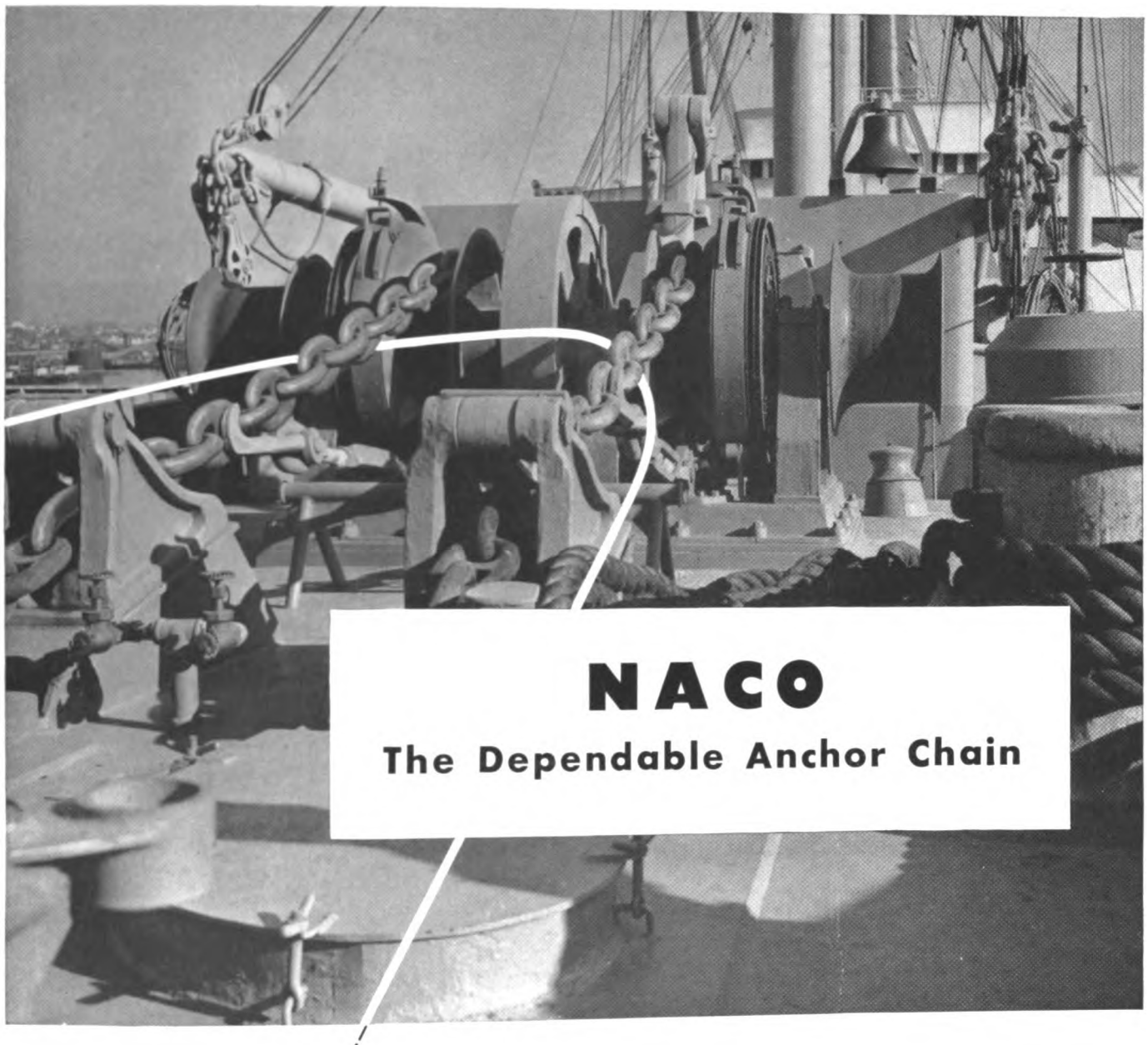
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Day Phone: YUkon 6-6526 Night Phone: JUniper 4-0975

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NACO

The Dependable Anchor Chain

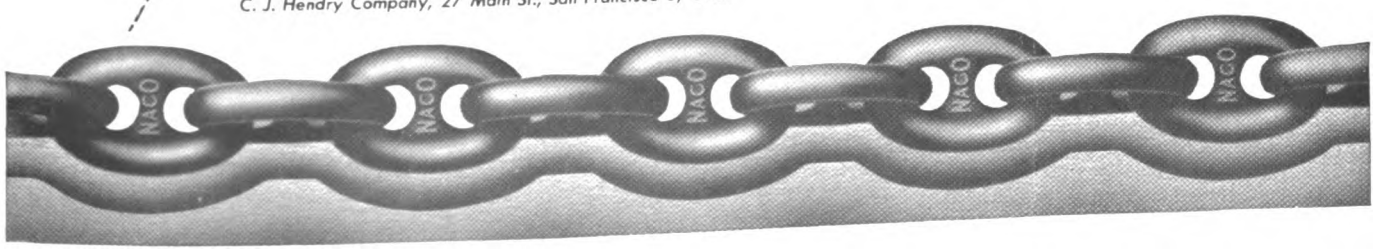
Dependability, strength and free-running qualities of NACO Anchor Chain have placed NACO high in chain popularity. NACO'S smooth, all-cast steel construction and uniform link size simplify and speed handling—promote safety of ship and crew.

To obtain top chain performance, National or E-Z Joining Links should be used.

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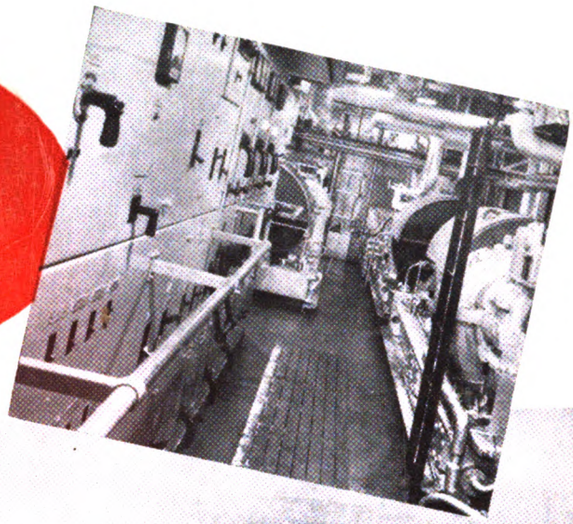
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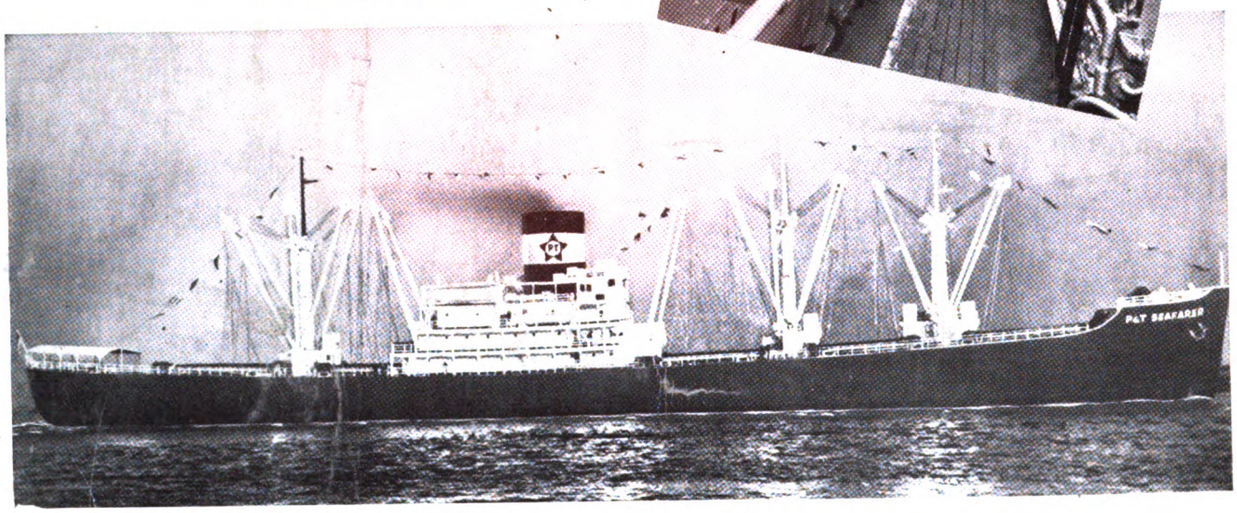
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DEPENDABLE

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